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## *Guest Editorial*

### The Virginias and Medical Education

IT NOW seems proper to comment upon the effective efforts of West Virginia to further solve its problems of medical education and the relation of this effort to the State of Virginia.

Based upon a comprehensive report of a committee of the West Virginia State Medical Association, of which the dean of West Virginia University medical school was a member, decision was reached that this is not the time to develop a four-year medical school in West Virginia; that, however, the program of the present two-year medical school at Morgantown devoted to the medical sciences should be further strengthened wherever practicable and arrangements made with some four-year medical school to receive West Virginia graduates in the medical sciences on a voluntary basis for the completion of their work, this arrangement to be subsidized by West Virginia University.

This recommendation was duly accepted by the authorities of West Virginia University, by the Governor of the State, and by the profession generally. An enabling act to make legal this proposal has been unanimously adopted by the West Virginia legislature which has also provided funds appropriate to the consummation of the project.

Meanwhile, the authorities of West Virginia University, backed by representatives of the State Medical Association, have been negotiating with the Medical College of Virginia with a view to working out arrangements for the transfer of some fifteen to twenty medical students annually to Richmond for the last two years of their instruction. This would add a total of from thirty to forty students per year after the first year to the third and fourth-year classes of the school of medicine at the Medical College of Virginia, whose total matriculation would still be less than a decade or more ago. The subsidy paid by West Virginia University and student fees would add something like $40,000 or $50,000 a year for instructional purposes in the clinical years of the medical course. Further, this proposal would not reduce the number of students from Virginia which can be accepted by the school of medicine of the college.

Since the first discussions regarding this new venture began many have been consulted, including the Governor of Virginia and other State officials, the Board of

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Visitors, faculty, alumni council, officers of the Council on Medical Education and Hospitals of the American Medical Association, officials of the Rockefeller Foundation, and many other leaders in education and medical education. Interestingly enough, the reaction in favor of this cooperative plan has been practically unanimous. Many have referred to it as pioneering of great moment and as a pattern for the solution of the two-year medical school problem. Others see in it a method of solving certain other issues, not all of them educational necessarily, which can be effected more soundly on an inter-state basis than on an intra-state basis. Some say that states increasingly must undertake joint action in the interest of economy and quality of results. Certain it is that many implications of far-reaching significance can be pointed to here.

To summarize, some of the advantages of cooperation between the two Virginias are: medical education in West Virginia can go forward in an approved manner and at reasonable cost; the cooperative arrangement will enlarge the constituency of the Medical College of Virginia by adding West Virginia and will make Richmond increasingly a medical centre for that State, which already has more physicians who are graduates of the Medical College of Virginia than of any other institution; the plan will call for no capital outlays and will not reduce the number of students which either institution now accepts; the increased revenues of each institution will permit strengthening teaching staffs; diplomas of West Virginia students will set forth the procedure followed in their education and will be attested to by certain individuals at each institution; the closest possible cooperation between the two schools will be developed in relation to curriculum organization, in promotion of students at Morgantown to Richmond and their subsequent graduation, and in the general welfare of each institution. If successful, a pattern for joint action by states will be demonstrated.

This program is tentatively scheduled to go into operation January, 1944. A formal contract between the participating medical schools remains to be approved and executed. Many of the details involved have already been carefully considered at length.

W. T. SANGER,
*President, Medical College of Virginia.*

EDITOR'S NOTE: Dr. Sanger is known to most of our readers and needs no introduction.

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## Floral Eponym (2)

The Partridge-berry, or Twinberry, Metchella repens, is named for Dr. John Mitchell, 1680?-1768. Dr. Mitchell was born and educated in England. He came to America about 1700 and settled in Urbanna, where he became interested in everything in his new surroundings. He wrote on botany, electricity, yellow fever, politics and published a map of the French and British dominions in America. He returned to London about 1747 and became a Fellow of the Royal Society.

# TREATMENT OF THE MENTAL DISEASES RELATED TO THE INVOLUTIONAL PERIOD*

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Shock therapy has become established as a form of treatment of the mentally ill. The first enthusiasm for the insulin cure of schizophrenia has waned until now this method of treatment is not looked upon as a cure-all, but a definite adjunct in psychotherapy. The use of insulin is confined mainly to early cases of dementia praecox or in the more chronic cases, in an effort to make them amenable to psychotherapy.

Convulsion therapy was first used in cases of dementia praecox also, but in 1936 and 1937 it was found that the metrazol-produced convulsion brought great relief in a large percentage of depressed patients, especially in those with the irregular or mixed depressions. In October, 1938, before this Society the writer reported the results of metrazol-produced convulsions on twenty patients. These patients had all been discharged and at least three months after discharge it was found that fourteen of the twenty were greatly improved or well at that time.

Since 1938 convulsive therapy, as well as insulin therapy, has been continued at the University Hospital. The insulin shocks, however, are rarely used in the affective disorders unless the patient is so distressed or so active that the sedative effect of the insulin is needed. Through 1938 and 1939 metrazol was used with good results as far as the personality reaction was concerned, but this drug was found to be especially dangerous because of its side effects; hence, in December, 1939, electro-shock was substituted for metrazol as a convulsive agent.

The present routine for shock therapy at the University Hospital is to use insulin in cases of schizophrenia that have not passed into the chronic form; to use insulin plus electro-shock in some few of the chronic schizophrenics, while in the affective disorders electro-shock is used. In the aged or in others in whom there are physical complications curare is used to soften the effect of the convulsion.

The present study is a report on the effect of convulsive therapy on a special type of disorder. This form of personality reaction is variously known as mixed depression, agitated depression, or as involutional melancholia. It is characterized by feelings of unworthiness, leading on to ideas of guilt. There is often hopelessness, indeed, an active denial of any hope. There is sadness, especially in the morning, with loss of appetite and insomnia. Accompanying these disturbances of thought and behavior increased motor activity prevails. This is first manifested by hypermotility of the gastro-intestinal tract with diarrhea or constipation, pylorospasm and then of the cardiovascular apparatus with flushing and rapid heart. Following these many psychosomatic disturbances comes the great restlessness of the whole body with walking to and fro or constant churning, as it were, of some physical activity.

This type of behavior occurs as a rule in persons who have never been secure. They are over-conscientious, meticulous as to detail, determined to do things right; an attitude, based on a fear of criticism, which leads to worry and anxiety if any failure threatens their correctness. The history will show one or two depressions previously, but, as a rule, nothing of a serious nature. The story differs markedly from that of the manic depressive, either of the cyclic form or of the recurrent depressive type. These attacks of agitated depression are most common at climacteric but may occur at any age, certainly from the third decade on. The illness is most trying as the suffering surmounts that experienced in any other disease. The duration in untreated cases will average approximately a year, but frequently the depression continues for two to four years. The older the patient the longer the sickness continues and the less likely the sufferers are to recover. This type of disorder from the point of view of immediate results seems to respond best to convulsive therapy; indeed, the shock is practically a specific for this syndrome. The late results, that is results months and years afterwards, have not been told, so as yet the ultimate value of the therapy in contrast to its risks has not been determined.

The present study is based on a review of all the cases with the agitated depression syndrome that were treated by shock at the University Hospital.

*Read at the annual meeting of the Medical Society of Virginia in Roanoke, October 5-7, 1942.

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All the records of patients receiving shock therapy were reviewed so that only those who presented this one definite syndrome would be considered. Cases of recurrent depression, cases that showed signs of a manic swing, and cases whose prepsychotic make-up cast suspicion on the diagnosis were all eliminated. No case admitted since January, 1942, was included, as an effort was made to get results at least six months after discharge.

TABLE No. I

| | |
|---|---|
| Total Number | 106 |
| Men | 37 |
| Women | 69 |
| Oldest Man | 74 |
| Oldest Woman | 71 |
| Majority of Men | 50—60 |
| Majority of Women | 40—50 |
| Average Hospital Stay | 42-29 days |
| Discharged As Improved | 75—70% |

This gave a grand total of 106 cases of agitated depression treated by shock therapy. There were sixty-nine women and thirty-seven men. The youngest man was twenty-seven years of age, the youngest woman twenty-nine. The majority of the male cases were in the fifth decade, and the oldest man treated was seventy-four. There were twenty-one women in their forties and twenty-two in the fifties. The oldest woman was seventy-one. There were eight men in their sixties and eleven women. The average age of the men was fifty-three and of women forty-nine. We interpret these findings as follows: namely, that the climacteric in women tends to bring feelings of failure to them at an earlier age than does the aging process in men. The presence of a male climacteric in the fifth decade might be discussed, but it seems best to leave that discussion to others. Certainly it is true that some people grow old in the late twenties and early thirties, while others do not feel TIME'S handicap until well into the sixties, so it is preferable to speak of the aging process as the cause of the more or less unconscious feeling of insecurity which produces the behavior pattern under discussion and to consider the climacteric as an added strain which often precipitates the reaction.

The immediate response to convulsive shock in this disease is most gratifying. Some cases respond after one, some after ten or more shocks, but as a rule five or six grand mal convulsions produce a reversal of the syndrome. The pathetic, agonizing wretch becomes an active somewhat elated individual whose one idea is to return home and to work. Of the 106 persons treated seventy-five were discharged from the hospital as improved. This improvement as a rule is quite marked. The course in the hospital follows similar lines in the majority of cases. After admission it takes ten days to two weeks to examine the patient carefully and to decide that shock is indicated; then, period of shock usually lasts three to four weeks; then, after the reaction is reversed, every effort is made to keep the patient for ten days to two weeks longer so that immediate relapse can be prevented. However, the patient feels so well and the relatives exert so much pressure it is difficult to prevent departure. The average number of hospital days, used by the series of 106 patients, was forty-two days or exactly six weeks. The untreated case with this syndrome is hospitalized for at least three months, so that this rapid turnover of a little over a month has many things in its favor.

Ten of the cases were treated with insulin alone, thirteen with metrazol and insulin, forty-three with metrazol alone and thirty-eight with electro-shock. It is interesting to note that all the cases treated with electro-shock were discharged as improved, while insulin has the lowest rate of improvement and the metrazol therapy shows improvement in thirty-nine out of forty-three treated. The electro-shock undoubtedly is much to be preferred to the other two forms of therapy, not only because of its immediate results but because of the absence of complications such as broken bones and other body injuries which so often followed the metrazol convulsions.

TABLE II

| | |
|---|---|
| Total Number | 106 |
| Follow Up | 64 |
| Well | 32—50% |
| Definitely Improved | 52—81% |
| Relapsed | 13 |
| Committed | 10 |
| Suicides | 3 |

From time to time during the last three years efforts have been made to keep in contact with this group of patients, but like all attempts at follow-up, the results have fallen far below our hopes. Sixty-four patients have been contacted since discharge, but the majority of contacts were made during the last year. None of the admissions of 1942 are considered in this series; therefore, the interval between discharge and last report is at least three or four months, if not one or two years. The average

duration of the follow-up interval was 14.3 months.

Thirty-two of the sixty-four reporting are to all appearances well. They are going on with their lives in a normal fashion. Twenty others are definitely improved. There are then fifty-two of the sixty-four definitely improved or well. This is an improvement in 81 per cent of the cases followed up. Thirteen cases relapsed and returned for further treatment; ten were committed to State Hospitals; three have committed suicide since discharge. There are forty-two other cases still to be heard from, but from our past experience it can be concluded that we are more likely to hear from the bad than the good result, as they usually seek some other physician. Therefore, we can feel that at least half of the remaining patients not heard from are improved. Thus our percentage of eighty-one for the whole group is justified. In this regard it is worthwhile to quote from the text-book of Strecker and Ebaugh, the 1940 Edition, "Involutional Melancholia is lengthy in duration—a course of eighteen months is not uncommon—the recovery rate is about 23 per cent to 40 per cent; the mortality by suicide and intercurrent disease about 20 per cent; 25 per cent to 32 per cent become chronic. After the age of fifty-five, or if there are advanced senile changes, the outlook is gloomy."

If we were to consider only the cases that are known to be well, ignoring those improved, then 50 per cent have recovered, and shock therapy would be worth while, but when we add to this the short period of hospitalization, the definite immediate improvement, which at least gives temporary relief and, finally, that convulsive therapy improves the aged as well as the young, regardless of physical status, the great value of this form of treatment is most impressive.

The agitated depression in the aged, the agitated senile so-called, has been considered the most hopeless and helpless of all sufferers. Such patients were a terrible sight to relatives and loved ones and a terrific strain on the doctor or attendant who was responsible for their care. Now this is all changed. This reaction to failing soma can be attacked and reversed, bringing relief with peace to all concerned. It is true that the dreaded relapse occurs, but, again, the reaction can be reversed, so restoring quiet for another period of six months or a year.

Mr. C—, a sixty-four year old farmer, was in the hospital for forty-one days. He was discharged and returned to work; came back seven months later, was in the hospital twenty-eight days and has now been out three months. Mrs. C—, sixty-one years of age, has had two visits eight months apart and is now home apparently well. Mrs. G—, sixty-eight, has had three visits and is now back on her farm at work. These patients were seriously ill, so ill that there can be no doubt that without shock therapy they would have suffered from a continuous illness, but now they are able to return home apparently well and to remain there many months. Each time they return they are older and it is to be expected that the free interval will be shorter, but, even so, there can be little doubt that the therapy is justified. If curare is used to lessen the muscle contractions during convulsion there is little danger of complications. Cerebral accidents are to be considered in the markedly arteriosclerotic. Undoubtedly there are many contra-indications, but shock therapy has placed a bright new day in the calendar of the psychiatric care of the aged.

Finally, a review of 106 cases of agitated depression is presented and a follow-up in sixty-four is reported. Fifty per cent were well, 81 per cent definitely improved several months after discharge. Convulsive therapy is apparently a specific for the agitated depressed reaction, whether in the young, the aged, the paretic, the diabetic or the senile. Electro-shock is the method of choice at present, but should be used with curare and curare-like acting substances in those whose physical stamina is limited. This is a small series, an incomplete follow-up, and, yet, time is too short to determine the ultimate value of the therapy. However, the results are encouraging enough to warrant continued use of this procedure until a better one is offered.

### DISCUSSION

DR. BEVERLEY R. TUCKER, Richmond: Dr. Wilson has presented a very enlightening paper on a new subject in a splendid way. The subject of geriatrics has been neglected, although it is possibly as important as the subject of pediatrics. In the cases that we have treated I have taken a different basis for the statistics from Dr. Wilson's, so they will not coincide completely, yet on the whole the similarity is remarkable. I excluded all cases under forty and included only those agitated cases over forty. So that brought us down to nineteen cases, all of which we called involutional melancholia or involutional agitated depression. Just what is involution is rather difficult to determine, if you look at the text-books. Roughly, the involutional period is that period in which adulthood is changing into senescence. There-

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fore, we took the periods from forty to fifty, from fifty to sixty, and from sixty to seventy as the involutional period. There were no cases over seventy and no cases in which attacks occurred previous to forty years of age. Involution is connected with menopause in women and men have change of life too. I think the tired American business man is, in a way, undergoing a change of life. Therefore "the dangerous age" is an involutional change. It is a pity that some of them are not tired and do not stay tired, for they might be less dangerous.

We have to select these cases very carefully; and none of these treatments, although the greatest contribution to psychiatric medicine I know of, should be slapped down on great numbers of cases without the careful investigation Dr. Wilson has stressed. We have to consider cerebral arteriosclerosis and certain thyroid states. I can recall, also mild acromegaly which resembled depression. Then there are situation psychoses, in which something terrible happens and the individual, during this involutional period, gets depressed or agitated, yet it is not caused by the involution but by the outside happening.

I was glad to hear Dr. Wilson say that he kept these cases ten days or more and examined them thoroughly before giving shock treatment. I agree with him that electric shock is the treatment of choice in chronic agitated depression. Insulin is the treatment of choice in schizophrenic cases. Then we have metrazol and also have lobectomy. So we have a choice of different methods of treatment.

In this restricted group under discussion we had nineteen cases. Eleven of them made what we call recovery and two of them a great improvement. Four of them made moderate improvement, and two of them were slightly improved. None of them were made worse. In our series of nineteen cases, seventeen were females and two males. Six occurred in the fourth decade, eleven in the fifth decade, and two in the sixth decade. I noticed that Dr. Wilson's also were mostly in the fifth decade.

Another important thing is that these cases did not need a great number of treatments. We have found out that very frequently an amnesia period that does not bring a convulsion is helpful. In this series we had two that had only amnesia treatments but had a good many periods of them. The improved cases averaged about seven convulsions and six amnesia treatments but some of them got well on one or two convulsions. We considered 68.4 per cent recovered or greatly improved. In this amnesia period is a great chance for accessibility in which one can use psychotherapy, which all of us feel is valuable. The mortality in electric shock is almost nil. I recently saw a report of 7,676 cases—not treatments but cases, and the mortality was only .05 per cent. If there was an average of five or ten treatments to a case, that would be a great number of treatments. I have not seen any cases injured by it.

To soften the convulsion curare has been used, especially in the metrazol treatment. In our cases sodium amytal proved very useful. It renders going into the treatment easier and makes the patient more comfortable. Sodium amytal does not seem to prevent the convulsion at all but makes the patient more comfortable. Paraldehyde I think might be used.

We should be careful not to mix our cases too much. We have seen reports in which lifelong manic-depressive cases have been included and also schizophrenic cases. I think if we separate them the reports would be more valuable.

I certainly want to congratulate Dr. Wilson on his paper. I think it was excellent.

DR. JAMES P. KING, Radford: I should like to ask Dr. Wilson what complication he has encountered as the result of electric shock.

DR. WILSON, closing the discussion: I thank Dr. Tucker for his addition to the paper and his discussion of it.

I do feel that there are a good many contra-indications. I think we have the idea of treating a reaction here, and it does not make much difference in what degree of seriousness it is manifest. If a person is able to stand the shock, then we should treat the agitation and depression. In other words, I apply it especially to the senile. We have shocked some patients that had definite atrophy of the cortex, with a good deal of memory loss and other sensorium changes. Often in apparently deteriorated, senile persons, when the agitated depressed reaction was taken away, this senile individual was found to be much more capable in many ways. The brain changes cannot be cured, but we can change the reaction.

The contra-indications are mainly of the cardiovascular apparatus, I believe, although arteriosclerosis should certainly be considered.

We have not had as much success with the petit mal reaction as mentioned by Dr. Tucker Unless we get a grand mal convulsion, we do not get the reversal that we like. Some cases are helped by it, but they are rare. We have not used the sodium amytal before treatment, as Dr. Tucker has suggested. We have found that any sedative may prevent the necessary response.

I do think that another contra-indication to electroshock is the psychoneurotic reaction types. Shock therapy does not help the psychoneurotic, so it is necessary to be very careful to distinguish between the psychoneurotic and involutional depression.

In the metrazol cases we did not x-ray all our patients, but we did get a good many crushed vertebrae. In the follow-up those cases were quite interesting. They had fractures of the bodies of the vertebrae four or five years ago. Now we find that a great many of them have pain in the back or pains around the chest, but they are practically well and are working only slightly handicapped by pains and aches.

We have not had any cerebral accidents. We have had some severe amnesias that have lasted long enough to cause worry, but all of them have disappeared. None have lasted over a week. Usually the amnesia does not last over two hours.

# CARDIO-DIAPHRAGMATIC SYNDROME*

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Richmond, Virginia.

One is not justified in presenting a purely clinical paper unless one is describing a previously unrecognized clinical entity or is broadening the implications of a commonly observed symptom. Thoracic pain referred to the areas supplied by the upper six dorsal segments, third to the eighth cervical and the left phrenic nerves is a not unusual subjective complaint; yet it is rarely appreciated how often the explanation of these annoying and severe symptoms are not to be found in diseases of the heart and aorta.

This discussion is concerned with a group of patients who have symptoms definitely suggestive of angina pectoris, but in whom the syndrome results, not from heart disease, but from disturbed function or defects of the diaphragm. For the purposes of clinical orientation, the term cardio-diaphragmatic syndrome is suggested.

In 1936 the author[1] reported studies on a patient who had grossly disturbed function of the diaphragm and symptoms significantly like those of angina pectoris. The functional disturbance of the diaphragm consisted of paroxysmal attacks of rapid and ryhthmic contractions graphically recorded at a rate of 300+ per minute. The symptoms were relieved by novocaine block of the phrenic nerve which resulted in a paralysis of the diaphragm on the injected side with cessation of diaphragmatic flutter. This case is of peculiar interest for it was the first recorded instance of a syndrome simulating angina pectoris which could be definitely related to a gross disturbance of diaphragmatic function.

Instances of this type are probably rare, yet less dramatic episodes of precordial oppression with shoulder and left arm pain occur with considerable frequency in patients who have gastric and colonic disease. The symptoms are apparently produced through distention of these organs by entrapped gas which interferes with the function of the left diaphragm.

Winkler, in 1933,[2] presented convincing evidence for a syndrome which he named "angina diaphragmatica". His theme was that there is a clinical entity unequovically related to disturbed function of the diaphragm which is difficult to differentiate from the angina of coronary artery disease. In this report he refers to many cases observed by others in support of his thesis. A critical review of his paper, coupled with one's experience with patients having chest pain and substernal oppression, forces the conclusion that he is justified in his premise and patients do have subjective symptoms referred to the areas usually affected in angina pectoris and that the symptoms are caused not by heart disease, but by gastro-intestinal disturbances which modify the function of the left diaphragm.

Our interest has been even more intrigued by those patients who have symptoms quite typical of angina pectoris associated with hiatus esophageal hernia.

Hedblom, in 1925,[3] discussing symptomatology in 378 patients, mentioned only 87 with thoracic symptoms; of these, only 19 had pain in the thorax and palpitation, and 2 had pain in the left shoulder. On the other hand, Jones,[4] in a review of his own cases, found in 91 patients with small hernias 34 who had substernal pain; and in 37 with large hernias, only 5 had substernal pain. To further emphasize the futility of attempting to answer the question of how frequent is a syndrome closely simulating angina pectoris produced by hiatus hernias, my recent personal experience is significant. Of the last 11 patients referred with a provisional diagnosis of angina pectoris, three had hiatus hernia and essentially normal hearts. On the other hand, the last three patients seen with a previously diagnosed hiatus hernia, all had thoracic symptoms suggesting angina pectoris. It is apparent that, statistically, a high percentage of the patients with hiatus hernias seen by me have precordial symptoms, while some of my colleagues interested primarily in gastro-intestinal diseases rarely see cases who have cardiac or thoracic symptoms.

In an attempt to give a descriptive picture of the clinical problem, three case records have been chosen. These represent a fair cross-section of the diagnostic problems usually encountered.

*Case Report No. 1.* J. S., a white man, aged 57,

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*Read at the annual meeting of the Medical Society of Virginia in Roanoke, October 5-7, 1942.

a mine foreman, referred in January of 1937 with a provisional diagnosis of heart disease, probably angina pectoris.

*Chief Complaint:* He stated that for approximately one year he had been incapacitated by the following group of symptoms: At a place just beneath the lowest point of the sternum there occurred, in paroxysms, a burning oppression which extended upwards over the left sternal margin to a point opposite the sternal notch. On several occasions the discomfort had been quite severe in the left axillary area. During one of the severest episodes a burning discomfort was felt on top of the left shoulder and the inner side of the left arm.

The attacks occur at irregular intervals and he is uncertain what precipitated them. He is convinced that there is no definite relationship to exercise, for some of the worst spells have occurred after retiring. Recently, against his physician's advice, he found that walking for recreation would give him positive relief. During the attacks his heart flutters and beats rapidly. On several occasions when the pain was most intense vomiting relieved him, and invariably belching occurs with the attacks with some relief.

Following the most severe spells the skin over the area of pain distribution is so sensitive that his shirt is uncomfortable. Significantly the attacks invariably occur if his work is unusually heavy and disturbing, particularly so if his sleep is broken by thoughts of his occupational difficulties.

He is convinced that simple foods in reduced quantities lessen the frequency and severity of the attacks. For the past few weeks he has been getting distinctly worse, so that sleep has been difficult; yet he feels very drowsy. Last evening at the hotel he took a "sleeping tablet" and slept well. This morning he expresses himself as feeling much improved.

He has consulted many physicians and has been given different advice by each of them, but all agree that he has serious heart disease. He himself has become quite apprehensive and fears that the attacks may prove fatal.

*Physical Examination:* Blood pressure was 130/80, pulse 82, respiration 20. The patient was an apprehensive man, manifestly much concerned about his physical status. The examination otherwise showed him entirely normal for a man of his age, except for hyperaesthesia of the precordial area extending from the third interspace above to the sixth interspace below and from the left sternal margin to the nipple line.

*Laboratory Data:* All laboratory findings were normal, including a negative Wassermann and Kline.

*Electrocardiogram:* Electrocardiogram showed occasional ventricular extrasystoles; otherwise normal.

*X-ray Report:* "A film of the chest at 7 ft. target film distance showed the transverse diameter of the heart to measure 13.8 cms. and the transverse diameter of the thorax 29.3 cms. Cardio-thoracic ratio was 46.1 per cent. The heart is shown normal in x-ray pictures." (Fig. 1).

Fig. 1.

*Studies of the Stomach:* "The barium passed down the esophagus, but was slightly delayed at the cardia. There is herniation of the cardia at the esophageal orifice of the diaphragm. The hernia measures 3 x 5 cms.

"Conclusions: Small hiatus hernia."

*Progress:* At the completion of the examination the patient was told that his heart was normal and

the cause of his symptoms was explained to him in simple terms. He visited his sister for two weeks and while there active exercise was encouraged. No restrictions in his diet were recommended, but he was advised to eat slowly and chew all food well. Belladonna in physiologic doses was prescribed and bromides in moderate doses were administered twice a day. He improved promptly and at the end of ten days he was free from symptoms.

His progress has been followed at intervals. His last visit was on August 20, 1942, nearly five years after he was first seen by me. He stated that at times when he works too hard and becomes nervous there would be a recurrence of his original symptoms, but he has learned that a few days of rest from his work and a return to his former medication would give prompt and satisfactory relief. His electrocardiogram remains normal.

*Case Report No. 2.* O. V., white female, aged 70, referred to the hospital with a provisional diagnosis of angina pectoris, probably complicated by coronary artery occlusion.

*Chief Complaint:* About six months ago she noticed on several occasions when drinking ice tea, the first few swallows seemed to stop at a point under the lower sternum, causing a hard aching lump. This would wear off in a minute or so and sometimes she could drink the rest of the tea. She finally concluded that tea was bad for her and left it off. She had no trouble swallowing soft or hard foods, and felt perfectly comfortable in every other way.

About two months ago one mid-afternoon she was seized with a hard aching pain under the lower sternum which remained for 20-30 minutes, then passed off. The same thing recurred the next day and three days later. Her physician was consulted, who gave her some medicine which gave little relief. Similar attacks recurred at intervals, not related to exertion or any other factor, and having no constant relation to meals. Five weeks ago she had a similar very severe attack of pain which was accompanied by a sharp aching pain in the left upper arm. This was the first time there had been any radiation from the lower sternal area. Her physician saw her at this time, and put her to bed, where she has remained. *Since being in bed* the attacks of pain have been more frequent and more prolonged, and on numerous occasions the radiation to the left arm has been noticed.

Two weeks ago after a day of rather severe substernal pain, she became very nauseated and vomited a small amount of food. A similar attack recurred within twenty-four hours and she was removed to the hospital in an ambulance. No other significant complaints were elicited.

*Physical Examination:* Temperature 99°; pulse 84; respiration 22; blood pressure 150/85.

The patient was a well nourished and preserved woman who was manifestly in considerable distress.

The examination did not show any physical phenomena of significance and the heart and vascular apparatus were normal for the patient's age.

Fig. 2.

*Laboratory Examination:* The laboratory studies were normal.

The electrocardiogram was normal for the patient's age.

X-ray studies of the esophagus and stomach showed: "The esophagus passed well posterior down to the esophageal orifice of the stomach at the level of the diaphragm but then there was at least half of the stomach herniated through the esophageal orifice into the thorax. In various lateral and

oblique views the rugae of the stomach could be seen covered with barium passing through this orifice of the diaphragm. The distal stomach and duodenal bulb were well outlined below the diaphragm and barium passed into the jejunum without delay." (Fig. No. 2).

*Progress:* The case presented many difficult problems. Relief of the herniation by operation was the treatment of choice, but the patient's age made such an operative procedure impracticable. It was assumed that the severity of the symptoms was due to an ulcer or inflammation in the herniated portion of the stomach and this assumption was in part confirmed by the improvement following a modified Sippy ulcer treatment.

All food and liquids were given with the patient in the sitting position and she was instructed to remain upright for one hour after every feeding. Belladonna and alkalies were administered along with the ulcer diet. The attacks were reduced both in severity and frequency.

This patient has been followed for approximately eighteen months. She continues to have mild digestive symptoms and occasionally some substernal pain and oppression, but she has improved greatly.

The electrocardiogram remains normal.

*Case Report No. 3. Chief Complaint:* Beginning approximately six months ago, the patient has been having at irregular intervals of three to five weeks paroxysms of substernal pain which have a throbbing and burning character. *Present Illness:* The physical discomfort is confined to the upper two-thirds of the sternum and extends up on both sides of the neck to the lower margin of the jaw. During the attacks any stress on the thoracic cage appears to aggravate the symptoms. Deep breathing modifies it by increasing the sense of deep soreness, yet he has no breathlessness or cough.

Bending over in an effort to lace his shoes definitely aggravates the pain. Getting out of bed or rising from a chair aggravates the discomfort, but after he is on his feet, he is convinced he is more comfortable and at times the pain will disappear while he is standing. On one occasion during a very severe attack there was discomfort passing across the back of his chest, approximately mid-way between the level of his shoulders and the center of the scapula. At no time has he had any discomfort in the top of his shoulders or down the arms.

His last attack which occurred a few days ago was one of the most severe and it lasted from Saturday afternoon about 5 o'clock through Sunday, but he awakened Monday morning feeling well.

During the attacks he sleeps more comfortably with his head elevated by two pillows. There is a slight degree of apprehension, but at no time has he had any symptoms suggesting circulatory collapse. *In between* the spells he feels well and can engage in physical work with perfect comfort. With the exception of the above complaint he expresses himself as being well and as having no cause for consulting a physician.

Fig. 3.

At no time has he experienced any digestive discomfort during the attacks, nor is there any difficulty in swallowing. He has given the matter much concern and cannot attribute the spells to any known factor.

*Physical Examination:* Physical examination shows him to be a man who has no appearance of illness. His eyes, ears, nose, and throat are normal. His chest was moderately emphysematous and he has a fairly marked degree of dorsal curvature which

gives his back a slight hump.

His lungs otherwise were negative. His heart apparently is normal in size and shape. The first and second sounds are of normal quality and intensity. There are no murmurs.

The peripheral vessels are soft. The pulse rate was 68; blood pressure 108 systolic and 78 diastolic. The optic fundi are normal.

The neurological examination was negative.

*Laboratory Examination:* The electrocardiogram was normal with the exception of an occasional ventricular extrasystole.

*X-ray Report:* "Barium passed down the esophagus without delay in the erect position but in the recumbent and Trendelenburg position, there was herniation of about 1½ in. of the cardiac portion of the stomach through the diaphragmatic hiatus. A film was made to confirm fluoroscopy." (Fig. No. 3).

*Impressions:* Careful analysis of the patient's symptoms are quite conclusive that the attacks are probably not angina pectoris associated with coronary artery disease. The most characteristic difference is that the attacks are in no way influenced by effort and in between the attacks he is entirely free from symptoms, and can undertake physical activity with perfect comfort. The x-ray shows a hiatus hernia.

## DISCUSSION

The idea that the diaphragm, stomach, and colon may be directly or indirectly concerned with symptoms quite similar to those occurring with coronary artery disease is not new. Morgagni in 1769[5] described in detail a patient who suffered from a "vehement cardialgia" but who was subsequently shown to have a diaphragmatic hernia.

In a book entitled "Angina Pectoris" by Walter Verdon, published in 1920,[6] the following extract from the diary of Dr. X, a case reported by the author appears.

"When tender spots, which come and go, are found at points of outcrop of intercostal nerves and when rigidity in somatic muscle appears, we recognize the existence of hyper-irritability at segmentary centres; when sensations pathognomonic globus are ingravescent and merge into agonizing pain radiating from thoracic stations, situated in one attack at upper, in others at lower, and yet again in others, at mid sternal regions, we know that these sensations are generated in esophagus and that they spring from spasm occurring at sectional portions of the muscular tunic of this lengthy tube.

"Now, we read the lesson writ large in cardiographic records and we learn from the tape that, even in the extremity of anginous pain, the heart may be pursuing the usual quiet tenour of its rhythmic round, unperturbed by disorder in any one of its five Gaskellean functions and wholly unconcerned in the gravity and turmoil of passing events.

"The stolidity of the heart startles us, and after repeated sequences of these displays, consciousness awakens gradually to the fact, that, no primary part is played in anginous etiology by this long suspected organ."

Verdon believes that angina pectoris has as its predisposing cause a "segmental cord neurosis" and the precipitating cause of the attacks is located in the gastro-esophageal canal. I am certain that no one could possibly agree with Verdon's major theme, for his hypothesis is too all inclusive. On the other hand, the book is intriguing and in the light of subsequent studies it must be agreed that his concept is in part correct.

Von Bergmann, in 1932,[7] was one of the first to specifically relate the pain of diaphragmatic hernia with the angina syndrome. His interest was in the possible mechanism of pain in hiatus hernia and the effects on the heart which might result from what he termed the "gastro-cardiac complex".

Roemheld in 1932,[8] Winkler[2] and Hofbauer[9] in 1933, all described recurring attacks in patients simulating angina pectoris which they concluded were definitely associated with and dependent on pathologic lesions of the diaphragm as well as disturbance of its physiologic function.

One of the intriguing aspects of this syndrome is the mechanism of pain production. The anatomical relationship of the cardiac end of the esophagus and the diaphragm to the aorta and heart would logically suggest an explanation for the similarity of the symptoms of coronary artery disease with the angina syndrome and the symptoms resulting from the diaphragm and the lower end of the esophagus. But of much greater importance is the relationship that exists between the autonomic nerve fibers supplying the lower esophagus and neighboring organs and the phrenic nerve and its occasional connection with the cervical sympathetic ganglia.

The esophagus is supplied with para-sympathetic (vagal) fibers which are largely motor and secretory

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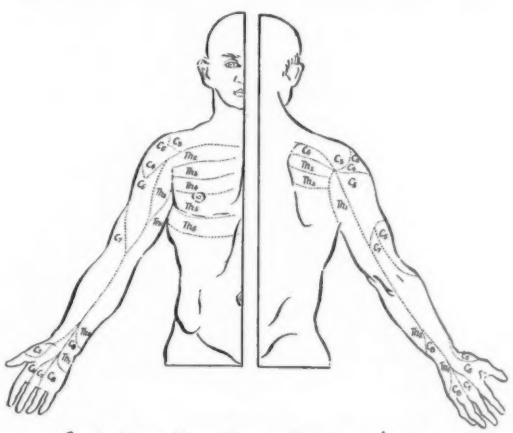
in function but there are some sensory fibers as well. From the same vagal nerve trunk there are fibers supplying the stomach, heart, and aorta. In addition there is a rich innervation of sympathetic fibers from the third to the sixth thoracic segments which carry both motor (efferent) and sensory (afferent) impulses. The observations of Capps has shown that pain arising from the tendinous portion of the diaphragm travels over the afferent neurons in the phrenic nerve and are distributed to the skin areas of the third, fourth, and fifth cervical segments. By careful anatomical studies Monteiro[10] has shown that at times there are filament connections between the phrenic nerve and the middle and inferior cervical sympathetic ganglia. This connection may well explain the pain in the arm which occurs in the occasional patient with grossly disturbed function of the diaphragm and the mechanism of pain distribution could conceivably be similar to that of angina pectoris. Jones and his co-workers have investigated the mechanism of pain in hiatus hernias in considerable detail. Basing their conclusions on their studies and the observations of many other investigators they have formulated tentatively the following conclusion:

"On the basis of these considerations, it seems highly probable that the pain of hiatus or diaphragmatic hernia is mediated over the visceral afferent fibers supplying the esophagus and the cardiac or fundic portion of the stomach, or over the sensory afferent fibers from the diaphragm contained in the phrenic or middle or lower thoracic nerves. Overflow to adjacent low cervical or low thoracic segments undoubtedly occurs. Over-distention of the lower end of the esophagus or the herniated portion of the stomach, with or without an associated localized esophagitis or gastritis, may thus be responsible for the production of anginal pain in any or all of its components. The shoulder pain is largely due to diaphragmatic irritation, probably by tension and traction exerted on the hernial orifice by the distended viscus contained therein. The relief obtained following the use of nitroglycerin or atropine indicates that esophageal and upper gastric disturbances are the most important components in the painful sensations experienced in this condition. This statement seems particularly applicable to the mechanism of pain noted by patients with small hernias. The role played by the vagus nerve is undoubtedly purely motor and is concerned in the production of neuromuscular disturbances, such as the spasm and abnormal peristalsis noted in the esophagus. Smooth-muscle disturbances may be initiated by a local inflammatory process at or near the cardiac sphincter, by distention of the herniated portion of the stomach or by central stimulation of the esophagus secondary to marked emotional tension or excitement. In all probability, acute emotional upsets actually affect the cardiac sphincter itself, with resultant achalasia due to sympathetic (adrenergic) over-stimulation. These motor disturbances are similar to those occurring in any hollow viscus and form the basis for most, if not all, visceral pain."

These explanations seem tenable, for they are based upon sound physiologic and anatomical facts and are in accord with the established concepts of referred visceral pain. A review of Chart No. 1



*Cervical and Upper Thoracic Dermatomes (Foerster)*

correlated with the knowledge of the nerve supply of the structures concerned in this discussion shows why sensations are distributed over those areas affected in angina pectoris.

If the evidence is conclusive that there is a syndrome which results from the esophagus and diaphragm and these symptoms are of such a character that they may be mistaken for angina pectoris, the importance of differential diagnosis becomes the essential clinical problem. The diagnosis of angina pectoris or coronary artery disease is a grave responsibility for the physician and a problem of great importance to the patient, for the prognostic implications inherent in the diagnosis are significantly concerned with life expectancy as well as occupational limitations.

In a lecture before the Royal College of Physicians of London in July, 1768, William Heberden, Jr.,[11] described a group of patients whose symptoms were so constant and significant that he gave the syndrome a name "pectoris dolor" (angina pectoris).

In the medical transactions of the Royal College of 1786, under the title "Some Account of a Disorder of the Breast," Heberden wrote:

"But there is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind of danger belonging to it, and not extremely rare, which deserves to be mentioned more at length. The seat of it, and sense of strangling, and anxiety with which it is attended, may make it not improperly be called *angina pectoris*.

"They who are afflicted with it, are seized while they are walking (more especially if it be uphill, and soon after eating) with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life, if it were to increase or continue; but the moment they stand still, all this uneasiness vanishes.

"In all other respects, the patients are, at the beginning of this disorder, perfectly well, and in particular have no shortness of breath, from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of the os sterni, and often more inclined to the left than to the right side. It likewise very frequently extends from the breast to the middle of the left arm. The pulse is, at least sometimes, not disturbed by this pain, as I have had opportunities of observing by feeling the pulse during the paroxysm. Males are most liable to that disease, especially such as have passed their fiftieth year.

"After it has continued a year or more, it will not cease so instantaneously upon standing still; and it will come on not only when the persons are walking, ing but when they are lying down, especially if they lie on their left side, and oblige them to rise up out of their beds. In some inveterate cases it has been brought on by the motion of a horse, or a carriage, and even by swallowing, coughing, going to stool, or speaking, or any disturbance of mind."

One must note with great interest that in this classic description of angina pectoris not a single phenomenon is stressed. A group of distinctive, subjective symptoms were observed in patients and these symptoms recurred under similar exciting factors and had a remarkably constant pattern of behavior.

Since Heberden, we have learned much about the nature, recognition, and prognosis of angina pectoris. Yet it is not fully appreciated how varied are the extra cardiac causes of oppression and pain located in the anterior chest, left shoulder, and with frequent radiation down the left arm, which have a striking yet superficial similarity to the angina pectoris associated with coronary artery disease.

A study of the quotation from Heberden's original description of angina pectoris reveals the very significant truth that the syndrome is essentially subjective in its clinical manifestations and that these symptoms consistently recur when stress is put on the circulation and when the stress is relieved symptoms disappear.

When one reviews the clinical records of the patients here reported and those studied by others, certain definite differences between angina pectoris and the cardio-diaphragmatic syndrome become apparent. In summary, they are:

a. Exercise is the most constant and consistent precipitating factor of symptoms in angina pectoris, whereas the symptoms of a hiatus hernia are effected with great inconsistence.

b. Food has variable effects in angina pectoris, but the symptoms of diaphragmatic hernia are usually aggravated by it.

c. Angina pectoris tends to progress so that less and less stress produces symptoms and the symptoms rarely if ever subside to a degree that exercise and other stresses fail to produce symptoms. The cardio-diaphragmatic syndrome frequently has intervals of entire relief from symptoms, and the progression of symptoms is not consistently concerned with physical activity.

d. The horizontal position, particularly at or soon after meals, usually aggravates the symptoms of a hiatus hernia, while it has no effect or relieves angina pectoris.

e. A patient who has had repeated attacks of angina pectoris decubitus and maintains a consistently normal or shows only minor changes in the electro-cardiogram should be studied for a possible diaphragmatic hernia, or other causes of chest pain, not related to coronary artery disease.

f. Atropine and bromides may relieve the symptoms of a hiatus hernia but will have no consistent effect on angina pectoris.

g. Finally, the full realization that heart disease is not the only cause for substernal pain and op-

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pression with radiation to the neck, shoulders and arm is essential to the correct anatomical diagnosis in patients having these elusive symptoms.

One readily appreciates how stimuli from the mediastinal structures, diaphragm, and sub-diaphragmatic organs may produce subjective symptoms in areas similar to those arising from the heart when the anatomical and physiologic intimacy between the parasympathetic, sympathetic, spinal, and phrenic nerves supplying these structures is comprehended.

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### DISCUSSION

DR. HUGH H. TROUT, Roanoke: For two reasons I am very happy to open the discussion of this paper. The first is because we all like to talk about those things of which we know very little, and the second reason is that I am delighted at this time to be able to talk about something besides the Procurement and Assignment Service of Virginia.

Dr. Porter indulged in a historical review, and I am going to follow his example. My particular interest in diseases of the diaphragm and pericardium is due to the fact that some years ago—more than I care to admit—I was present at the first autopsy done by Dr. Pick in a case in which the diagnosis was made before death of pericardial adhesions. The diagnosis was made beforehand and the autopsy done afterwards, and, as a student, I watched this first autopsy for this condition. This was the beginning of the recognition of "Pick's syndrome," "pericarditic pseudocirrhosis," etc.

Some years ago we called attention to the fact that in a certain group of these pericardial adhesions the pain might be due to the conflict between the cardiac beat and the respirations with the up and down motions of the diaphragm. With the two tied together by adhesions there was a conflict and it seemed that if either the heart or the diaphragm could be put out of business temporarily, such a procedure might relieve the pain. The heart certainly could not be put out of business; so, looking at it, as a surgeon, we decided to see what we could do toward paralyzing the diaphragm. We were much surprised and certainly very much delighted to see that interruption of the left phrenic nerve gave a large number of these cases great relief from pain.

Also, these patients could be gotten into a better condition so that some type of cardiolysis operation could be done if such became necessary. Altogether, we have had four cases in which we have done a cardiolysis operation for adherent pericarditis. In eighteen cases the phrenic nerve has been pinched preliminary to preparing the patient for a more extensive pericardial operation. Fourteen of them, however, have been so greatly improved that they have refused to undergo the more extensive operation.

In many cases so much relief has been gained from pinching the nerve that it might seem worth while to try the same thing for those cases of which Dr. Porter has spoken. Personally, I do not like to avulse the phrenic nerve, and no one is going to pull out my phrenic nerve until the "pinching" has been tried first and found to give relief.

Dr. Porter referred to diaphragmatic hernia, and I want to report one case of pain from diaphragmatic hernia in a patient who had a very pleasant way to relieve himself. He had a large diaphragmatic hernia and carried it for years. When the stomach, etc., became caught up in the diaphragmatic opening, he would have attacks of severe pain, but he refused to have an operation on his diaphragm. He preferred to drink three or four bottles of beer while standing up at the bar. The weight of the beer was sufficient to pull the abdominal contents back to their normal positions, and the patient obtained relief.

He maintained he could not drink enough water to accomplish the work done by the beer.

DR. PORTER, in closing: I want to thank Dr. Trout for his discussion. I regret that he has not seen fit to discuss the paper and has consumed his time in the discussion of constricting pericarditis. The two diseases are in no way related.

He has been a little bit historical and I myself am similarly inclined. The first recorded patient in whom

the symptoms were those of precordial pain and who showed at autopsy diaphragmatic hernia was the one reported by Morgagni in 1769.

One of the most interesting aspects of the subject under discussion is concerned with the mechanism of pain. It is well known that only a small percentage of individuals who have a hiatus hernia ever have any significant symptoms. It is possible that changes occur in the herniated portion of the stomach which produce an irritable focus from which afferent stimuli emanate. These are carried over the third, fourth, fifth, and sixth dorsal segments through the sympathetic nerves and if the stimuli are sufficiently intense, there is an overflow to adjacent cord segments. Undoubtedly the pain in the shoulder is carried over the sensory fibers in the phrenic nerve.

Recently a Portuguese anatomist, his name not recalled, has shown that there exists definite connections between the phrenic nerve and the middle and inferior cervical sympathetic ganglia. It is conceivable that this anatomical connection may explain the pain in those patients who have gross disturbance of diaphragmatic function.

## SOME OF THE "DO'S AND DON'TS" IN THE TREATMENT OF FRACTURES—WITH SPECIAL REFERENCE TO THE RURAL PRACTITIONER WHOSE BURDEN AND RESPONSIBILITY WILL BE INCREASED BY THE PRESENT EMERGENCY*

T. JEFFERSON HUGHES, M.D., F.I.C.S.,
Roanoke, Virginia

In presuming to write an article on the subject of fractures, I do so with the feeling of the inadequacy of my knowledge to do justice to the subject. I spent the first ten years of my professional career in a remote rural district, where consultation was not easily obtained, and where diagnostic facilities, such as x-ray and other instruments of precision were not available. Therefore, I found myself doing everything, from removing a gangrenous appendix in an attic, with no entrance or exit large enough to remove the patient; a thigh amputation on the front porch of a mountain cabin, with a mountaineer administering the anesthetic and a neighboring housewife keeping the flies off the field of operation with a homemade, paper fly brush; to treating all manner and kinds of fractures, as side issues to the general practice of medicine.

The rural practitioner today, through the medium of good roads, automobiles and other more up-to-date facilities, has come to depend largely upon the specialist in the various branches of medicine and has, to a greater or lesser degree, become more dependent on outside assistance. The present national emergency will deprive those of us who are left to guard the health of the civilian population of the services of many specialists. We will, therefore, be compelled to rely upon our personal resources more than formerly.

I feel that a discussion of some of the more simple methods of dealing with fractures and other traumatic injuries will be opportune at this time, and if the discussion serves to renew our interest and bring the simple procedures, which are so essential to the successful handling of these cases, more up-to-date in our minds, the purpose of this paper will have been accomplished.

Preventive measures are the most important factors in conserving and improving our health standards. Large corporations have eliminated a great many accidents through education, by safety programs and by the incorporation of safety devices. From 75 per cent to 85 per cent of the accidents which would have occurred under conditions existing a decade ago, are prevented today. Ralph Lee, of the General Motors Corporation, in an address on "Human Failure Accidents", made the statement that as a result of determination, cooperation, and persistent effort, his corporation had been able to prevent 83 per cent of the accidents which would have occurred under safety conditions which existed in 1929.

While prevention has played, and is playing, such an important part in reducing corporation accidents, we are still faced with an increase in motor vehicle accidents, and, with the prospect of war casualties, the treatment of fractures is subject to a further increase during the present emergency.

I believe that the greatest contributing factor in the cause of motor vehicle accidents is the consumption of alcohol as a beverage. Alcohol is incom-

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patible with the machine age in which we live. In a study by a committee of the American Medical Association it was concluded that a person driving a car with .15 per cent of alcohol in his blood was 55 times more likely to have an accident than one who had no alcohol in his blood. Other contributing factors to the increase of motor vehicle accidents are defective vision and administration of certain drugs, such as opiates, barbiturates, etc.

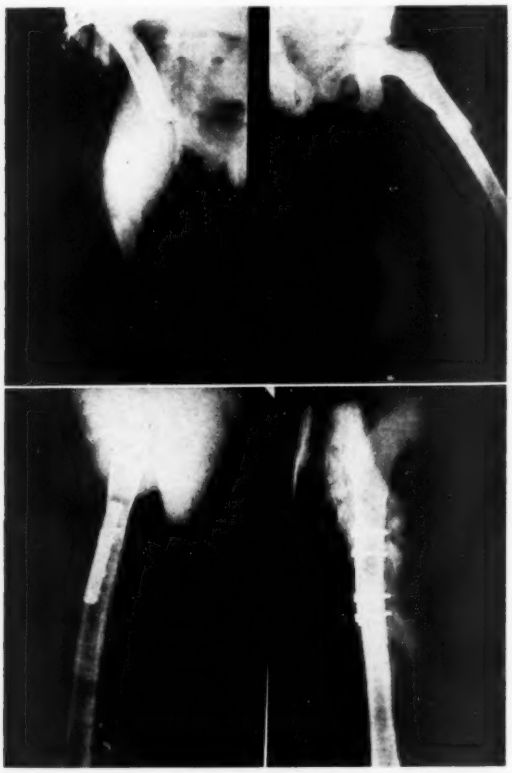

Fig. 1.—Fracture of upper third of femur reduced by open method by means of Lane plate.

It is also interesting to note that since the beginning of our preparation for war the number of corporation accidents had greatly increased due to the unusual number of unskilled employees who have not yet learned to protect themselves from machinery.

Recent statistics revealed that from Pearl Harbor up to date we have lost about 5,000 persons in combat service, as against 35,000 due to accidents of various kinds. According to the National Safety Council's figures, there were 102,500 accidental deaths in 1941, and 350,000 permanently disabled, with about nine million lesser casualties.

William A. Irvin, former vice president of the United States Steel Corp., and now chairman of the War Production Fund to Conserve Man Power, had this to say: "Today we have new men, new machines, longer hours and a faster work pace. All these and other added pressures of war time mean more hazards and more mishaps to the workers."

While most large corporations have safety programs, the smaller firms, practically all of which are now changed over to war production, either do not have or cannot afford to have, extensive safety programs. All of this adds up to a great increase in accidents due to the national emergency.

In case of an accident, the following simple rules should be borne in mind:

(1) Do not move patient from the scene of the accident until a temporary dressing and splint have been applied.

(2) If there is no evidence of head injury, give patient hypodermic of morphine to relieve pain and lessen shock.

(3) If shock is severe, this should be treated before reduction is attempted.

(4) If the fracture is compound, sprinkle sulfanilamide in the wound immediately, and administer tetanus and gas-gangrene serum as soon as possible.

(5) If the fracture is of the upper part of the spine; transport the patient lying on his stomach; if of the lumbar region, lying on his back, as these positions favor immobilization in the respective localities of the fractures.

(6) Do not attempt to reduce a fracture without the use of either a local or general anesthetic.

(7) The pain of a fractured rib will be relieved by injecting novocain in the vicinity of the fracture before moving the patient.

(8) Accomplish thorough debridement, clean the wound with soap and water and irrigate it with normal saline solution. It is not necessary to use caustic antiseptics and, indeed, it may retard healing through coagulation of the tissues. Excise the skin edges and discard the instruments used. If the ends of the bone fragments are grossly contaminated and impossible to clean, excise them with saw or bone forceps.

(9) After removing the devitalized tissue, release the tourniquet and stop bleeding; then irrigate again with warm saline solution, sprinkle more sulfanilamide powder, and, after reducing the fracture, close the wound, avoiding the use of buried sutures if possible.

(10) Apply dressing, immobilize the fracture and do not remove the dressing for from three to five

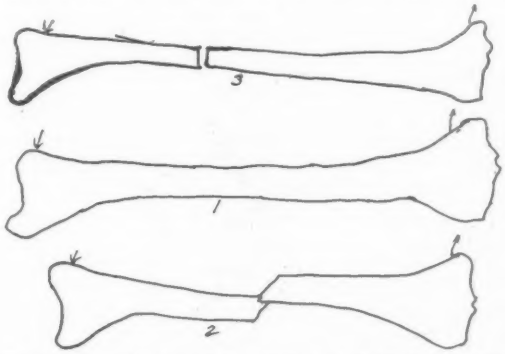


Fig. 2.—Percussion-Auscultation Method of diagnosing fracture of bones. In No. 1 (no fracture) the audibility of vibrations normal, clear and distinct. In No. 2, the audible vibrations are diminished. In No. 3, there are no audible vibrations.

weeks unless there is evidence of sepsis, such as chills, fever, etc.

(11) Watch for symptoms of gas-gangrene. It is better to administer gas-gangrene serum weekly until the dressing is removed.

(12) In chest injuries, the nature of the injury should be determined, if possible, before moving the patient. The simple introduction of an aspirating needle will give valuable information. If you have a pneumothorax, air will escape; while if you have a hemorrhage, blood will be aspirated. If the latter, the patient should be transported with the chest elevated. The cyanosis usually present in these cases is due to pressure by air or blood interfering with the return circulation. Aspiration will serve to relieve this pressure.

(13) In puncture wounds of the chest, plug the opening immediately with whatever cloth or gauze is available, to exclude outside air. Cloth or gauze covered with vaseline serves well for this purpose.

In compound fractures or in open-operative treatment of fractures, care should be exercised to maintain the best possible blood supply, by keeping the member warm and encouraging the movement of the fingers and toes of the fractured limb. In the treatment of compound fractures, as in the open method of treating un-united fractures, it is usually necessary to wire, plate or use some method of bone graft to hold the fragments in apposition and great care should be exercised to interfere as little as possible with the circulation, since callus comes via the blood—75 per cent from the bone marrow and 25 per cent from the periosteum (Albee). It is, therefore, important when grafts are used, to cut the graft in such a manner that marrow will be left attached to the graft. Here precision surgery is important. Insert a properly fitted graft so that marrow comes in contact with marrow, and periosteum in contact with periosteum, thus favoring the development of callus.

Complete immobilization of fractures after wiring

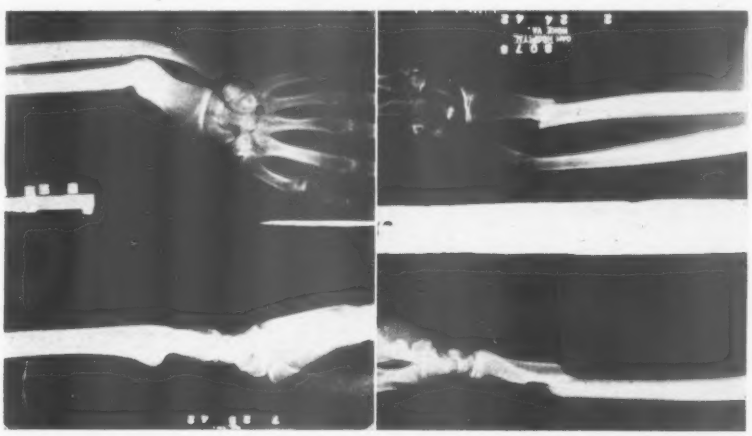

Fig. 3.—Fracture of radius and ulna reduced by closed method and plaster cast applied. Cast removed too early, followed by bad functional and anatomical results.

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or the insertion of bone graft is necessary for a period of from eight to nine weeks and, as previouly stated, every facility for increasing the circulation to the parts should be employed, even the movement of the fingers and toes giving considerable exercise to the muscles of the injured limb.

We are all familiar with the swelling of the limb long after union of the bone has taken place. This swelling is largely due to atrophy of all of the tissues, including the blood vessels, which lessens the blood supply.

The question of the selection and the method of applying the sulfa drug was discussed at length at a recent meeting of the International College of Surgeons in Denver. The majority of those discussing this favored sulfanilamide due to its greater solubility. As proof of this fact, it was claimed that, by the use of polarized light, sulfathiazole crystals have been found in an excised incision weeks after it was used; not so with sulfanilamide. The best method of its use is to sprinkle it from a container, similar to a salt shaker, rather than to dump it in, in bulk, thus favoring absorption.

A simplified method of treating common fractures of the arm may be of interest, and will be briefly considered, since the general practitioner is often called upon to handle these cases.

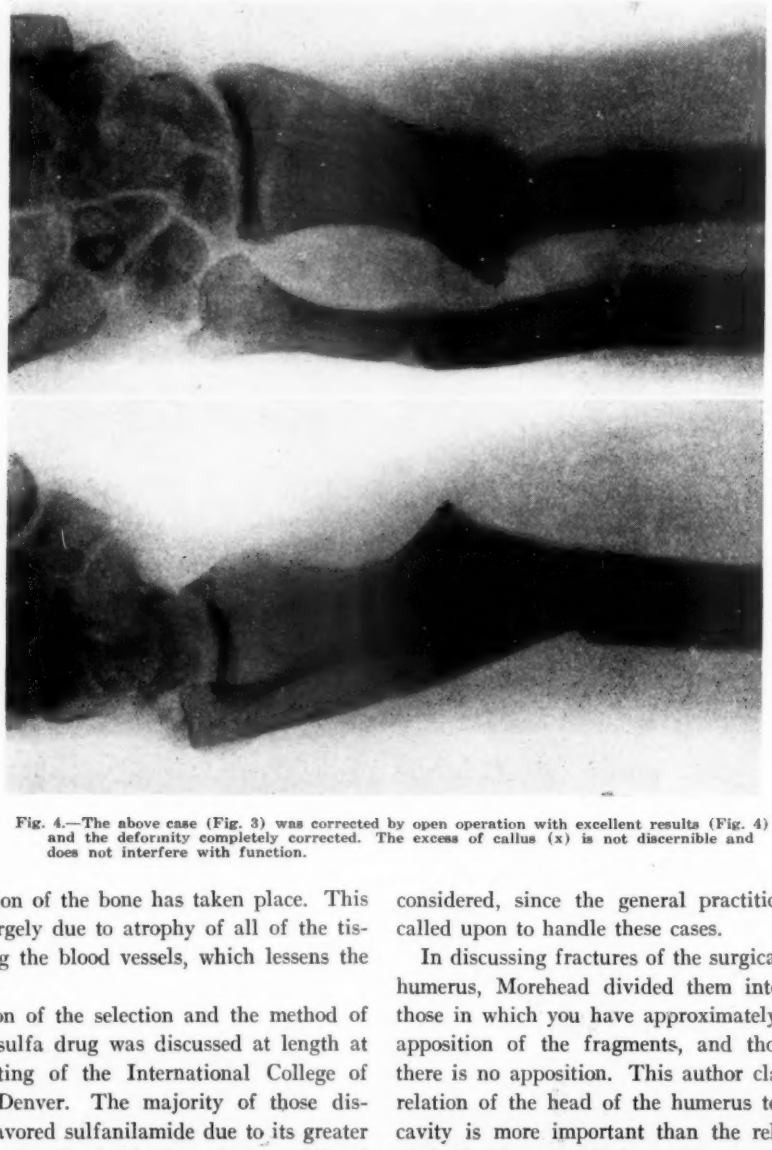

Fig. 4.—The above case (Fig. 3) was corrected by open operation with excellent results (Fig. 4) and the deformity completely corrected. The excess of callus (x) is not discernible and does not interfere with function.

In discussing fractures of the surgical neck of the humerus, Morehead divided them into two types; those in which you have approximately 50 per cent apposition of the fragments, and those in which there is no apposition. This author claims that the relation of the head of the humerus to the glenoid cavity is more important than the relation of the of the head to the shaft, and he warns against the danger of increasing the displacement in an effort

to improve the reduction. He recommends the use of the sling, with early active and passive motion to prevent adhesions. Geckler approves of hanging traction with no support under the elbow. A good way to accomplish this is to apply a plaster cast from hand to axilla, with the fore-arm flexed. In this position, the longitudinal muscles exert a squeezing effect on the fragments, and the tendon of the long head of the biceps muscle will control the upper fragment. The *modus operandi* is similar to that of the hanging cast in the treatment of fractures of the shaft of the humerus, which gives good results in a majority of the cases. Some allow the arm to hang straight by the side; I prefer the arm flexed, as this allows continued traction at night with the use of the back rest.

The treatment of Colles' fracture, which is so frequently seen, is familiar to every one, and needs no special reference here. In fractures of the elbow, the treatment is more difficult and the result more often unsatisfactory; therefore, these cases should be referred, if possible, to men specially skilled in this class of work. Neither should the general practitioner attempt the use of Smith-Petersen pin or the establishment of counter traction by the use of the Kirschner wire, as these operations require special skill and hospital technique.

In this connection, I would like to call attention to the advantages of using a local anesthetic in reducing fractures of the extremities and other superficial bones. The injection of a liberal quantity of a 1 per cent solution of novocain in the locality of the fracture not only relieves the pain incident to the manipulation but also relieves and prevents spasmodic contraction of the muscles during and following reduction.

Pertinent to this discussion, one of the more recent advances in the treatment of sprains is the injection of novocain solution in the injured tissues; it relieves the pain and enables a much freer use of the parts injured.

If x-ray is not immediately available, it is sometimes difficult to diagnose the existence of a fracture or to determine whether the fracture has been successfully reduced. A simple procedure described by Virgevani in 1925, and by Lippman in 1932, and again described by McGraw in a recent issue of the *Archives of Surgery,* is as follows: Place the bell of the stethoscope over one end of the fractured bone and percuss over the other end of the bone. If there is no contact of the fragments there will be no audible vibrations. If there is contact, the intensity of audibility will be in direct proportion to the degree of contact.

A few simple instruments, either home-made or purchased from a hardware store, which may be used in wiring or plating a fractured bone are:

1. Ordinary pliers, costing 60c, with jaws ground to fit the bone.
2. Retractor and periosteum elevator, combined, machined from a thin piece of flat steel.
3. Flexible wire with notch filed in flattened end to push wire through hole drilled in bone.
4. Slender flexible wire with crochet hook filed in flattened end to draw wire through hole in end of other fragment.
5. Part of a broken stethoscope with hole drilled in flat end, used to pass around bone to draw wire or band around same when so desired.
6. One pair pliers, costing 25c, used for twisting the wire.
7. Wire cutters, costing $1.00.

Total cash outlay for these instruments, $1.85.

## SUMMARY

Nothing new is claimed, but rather a discussion of simple procedures, most of which are already in use, in the treatment of fractures and other traumatic injuries.

The importance of maintaining good blood supply to the injured parts, both during the operation and in the after treatment, has been stressed as very efficacious in the development of callus and lessening swelling during the period of convalescence.

The effect of chemo-therapy, in preventing infection, makes it possible to institute primary operative procedures.

A few improvised instruments used in obtaining apposition of the fragments are presented.

A simple aid in diagnosis of a fracture of the long bone by means of the stethoscope as described by McGraw is illustrated.

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### DISCUSSION

DR. BERNARD H. KYLE, Lynchburg: The first point that Dr. Hughes brought out with reference to treatment of fractures was immobilization of fractures at the scene of accident, which I think is one of the most important treatments of fractures. We still have ambulances bringing fracture cases into the hospital without any type of fixation whatsoever, and yet we have done a great deal in the way of advertisement and talking in order that all ambulance drivers may be skilled in applying Thomas splints to the legs and arm splints to the arms. Yet they still come in without any type of fixation. I hope everyone here will urge all ambulance drivers in his community never to move a patient from the scene of accident until properly splinted.

In open wounds sulfanilamide crystals should be used, because crystal sulfanilamide is the best sulfonamide drug to put into open wounds. First, the sulfanilamide crystals will seldom cake; sulfathiazole will. Second, it is 1,700 to 1,800 soluble in tissue fluids, while sulfathiazole is only 110 to 200 soluble in tissue fluids. Wounds may be debrided in from 24 to 36 hours after the accident, without infection, provided sulfanilamide crystals have been used immediately following the accident. The best drug to use by mouth is sulfadiazine, because sulfadiazine has a blood level of 6.5, sulfanilamide, a level of 11.9, and sulfathiazole 18.6. That is quite a difference, and it is safe to give provided plenty of fluids are given. The urine output should not fall below 1,000 c.c. in 24 hours if sulfadiazine is used. Bicarbonate of soda should not be used with sulfadiazine, because it increases ionization of the drug and renders it more toxic to the kidneys.

In reference to fractures near the shoulder joint, especially the surgical neck of the humerus, my experience has been that one gets quite a bit of abduction of the proximal fragment due to the posterior scapular muscles, especially the supraspinatus. Those muscles which are attached to the greater tuberosity also tend to rotate the upper fragment outward. The inward displacement of the lower fragment is due to the pectoralis, latissimus dorsi and teres major. Abduction brings them in line better than the straight-down or adducted position. I think the straight-down position, as mentioned by Dr. Hughes, works nicely in a great many fractures of the shaft, but not fractures of the surgical neck. I prefer abduction. If there is marked displacement, reduction under a general anesthetic is necessary, followed by traction in abduction.

Just a word in reference to a epiphyseal displacement in young people which gives the appearance of a dislocated shoulder. If one carefully palpates, it can be found that the head is in the glenoid fossa under the acromion process, and not under the coracoid process, as in the case of a dislocated head.

Fractures about the wrist and ankle joint, are often taken for sprains. I think we should be very careful in diagnosing sprains of the wrist and ankle joint, because they are often fractures. Colles' fracture is easily reduced. Do not extend the cast beyond the knuckle joints, because if this is done a frozen hand is often the result, which is very difficult to handle and requires long treatment in order to restore motion to the fingers and wrist joint. I might say here, I think one had better have the deformity and good motion than to have no deformity and no motion.

The principle in fractures, of course, is reduction of the fracture and the maintaining of that reduction without any damage to the circulation or to the soft parts. I think these are the important principles laid down in treating fractures. Plaster casts offer the best means of immobilization, but be sure you do the patient no harm as pressure is apt to occur at the malleoli or wrinkles result when improperly applied, causing damage to the soft parts as well as to the bone. Casts can easily be bivalved. If you cannot do the patient any good, don't do him any harm.

I have had no experience with chest injuries, and neither have I with the diagnosis of fractures by the percussion method.

A word in regard to plating bones. It is a nice surgical procedure for the surgeon skilled in operating to put in a plate, which, I think, never should be done unless the closed method has been tried and failed, because, if one gets osteomyelitis, especially in children, it remains with you, as well as the patient, from then on.

I want to thank Dr. Hughes for his paper and for the privilege of discussing it.

DR. E. P. TOMPKINS, Lexington: I should like to hear a little discussion of the amount of motion permissible in a plaster cast, especially of the femur. When a cast is applied there is a certain amount of swelling, which usually subsides in a few days, and then there is a certain amount of looseness of that cast. How do you deal with that? Should you take that cast off and reapply it?

DR. HUGHES, closing the discussion: I have nothing further to say, except to thank Dr. Kyle for his discussion, and to say in reference to Dr. Tompkins' discussion that, in my limited experience, I have rarely had an occasion in which it was necessary, or that I thought it advisable, to remove and re-apply the cast after swelling had subsided.

The amount of swelling serves to hold the bones pretty well for a number of days. The swelling usually subsides gradually, and then the little play that you have serves well to prevent any obstruction to the circulation.

As brought out in my paper, I think the main thing in the treatment of fractures is to preserve the circulation, because without good circulation, you will get poor results.

# ON LACQUER DERMATITIS*

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Contact dermatitis caused by lacquer on furniture and other objects is a very ancient disease. The Chinese have been lacquering furniture for over two thousand years. The original oriental lacquers were made from a pitchlike material which oozes from certain trees, especially the banyan and ligustrum (privet), the bark of which has been damaged by insects. The insects eat the material and deject the residue on the branch. They become imbedded in it. The Sanskrit word *lac* means a hundred thousand. Lacquer derives its name from the thousands of insects imbedded in it.

Another oriental material widely used in lacquering or "japanning" is the sap of rhus vernicifera, an oriental sumac closely related to poison ivy and poison oak. Its oil causes contact dermatitis among workers and appears to be identical with the oil of poison ivy. Many of the furniture workers in Japan and China find it necessary to wear gloves to avoid getting dermatitis. There is thus a close relationship between lacquer dermatitis and ivy poisoning.

After the lacquer has dried it becomes relatively inert as an allergen but highly sensitized persons may have trouble from it even though very dry and very old. There is a report of dermatitis due to handling a piece of furniture one thousand years old.

Lacquer dermatitis was recognized in Europe in the seventeenth century, when japanned furniture became popular. It was recognized in China two thousand years ago. Even at that remote date the Chinese had a treatment for it. This consisted in poultices made of crab meat.

Not many years ago there was an epidemic of mah jong playing in the United States. Many cases of dermatitis of the fingers and face resulted from handling the mah jong blocks. In general, the more expensive the set, the greater was the danger of dermatitis. This might be interpreted as indicating that such sets were authentically oriental. Another cause of lacquer dermatitis of the hands, mentioned rather frequently in the literature has been lacquered walking sticks. The opportunity for prolonged contact is obvious.

Modern lacquer manufactured in this country is largely synthetic. So many different chemicals are used by different manufacturers that when contact tests are to be made it is important to use the actual lacquer to which the patient has been exposed, either scraping it off the furniture for that purpose or procuring it from the manufacturer. One cannot safely use just any one brand for testing all cases suspected of lacquer dermatitis.

The essential ingredients of lacquers used in this country are (1) nitrocellulose or pyroxylin, to give a good clear transparent body; (2) a resin to add adhesiveness, gloss, and hardness (rosin, shellac, dammar, kauri, copals, sandarac, mastic, elemi, which are natural resins, or ester gum, bakelite, lewisols, etc., which are synthetic resins); (3) plasticisers, added to prevent cracking and peeling (oils such as castor oil, rapeseed oil, linseed oil); (4) volatile solvents such as ethyl acetate, butyl acetate, toluol, ethyl alcohol, benzol, etc.; and (5) pigments.

Sensitization may occur to these American lacquers as well as to oriental lacquer. In one series the proportionate frequency, oriental to domestic, was approximately fifteen to one. Curiously all persons who reacted to domestic lacquer also reacted to the oriental type.

As is usually the case in contact dermatitis, the etiologic agent can often be suspected from the location of the dermatitis. The hands are involved most often. This, of course, does not point to lacquer but merely suggests a contact origin. Unusual locations, however, will often lead one to suspect the causative agent. Thus, a ring of dermatitis on the buttocks suggests toilet seat lacquer dermatitis, while dermatitis of the extensor surfaces of the forearm extending from the wrists nearly to the elbows (an unusual distribution for contact dermatitis) was found in one instance to be due to the lacquered arms of a porch rocking chair. A stenographer had dermatitis of the contact surfaces of the right thumb and forefinger. This suggested occupational contact and the cause was found in an ordinary yellow enameled pencil. When she changed to an alumi-

*Summary notes on an illustrated talk, "Lacquer Dermatitis", presented at the Roanoke meeting of the Medical Society of Virginia, October 6, 1942.

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num automatic pencil the dermatitis cleared up. Involvement of the area behind the ears or in the scalp suggests lacquered hair pins or bobby pins.

Nail polish dermatitis is another form of lacquer dermatitis which can often be suspected because of its peculiar distribution. The basic ingredients of nail polish are essentially the same as and often identical with ordinary furniture lacquer. I have seen one lady whose dermatitis could be brought on either by contact exposure to her new set of bedroom furniture or by nail polish. The distribution was the same, on the face and neck in either case. This is presumably because the allergen from the furniture (dresser drawers, etc.) was carried indirectly by means of the fingers.

Nail polish dermatitis is characteristically distributed on the region of the left cheek and left side of the neck in right handed persons. This is the area that one is more likely to touch or scratch with the right hand. The eyelids are often involved either alone or along with the left sided facial distribution.

In most cases of nail polish dermatitis the fingers remain free from involvement, although this is not invariably so.

Nail polish sensitization may play a part on any area of skin that one happens to habitually scratch. It may appear on the leg from the application of nail polish to stop an incipient run in silk hose.

One may be allergic to one brand of nail polish and not to another. One may be allergic to the transparent uncolored nail polish that merely gives a gloss to the nails. Patch tests will enable one to determine what brand if any may be used by the patient.

Although lacquer dermatitis is common enough in the office of the allergist and dermatologist, most people are, fortunately, rather insusceptible. When the hands alone are involved there is little to suggest lacquer as the etiologic agent, but involvement of certain unusual contact areas such as those described above makes one suspect lacquer either on something one handles or on one's person.

*201 West Franklin Street.*

### DISCUSSION

**DR. WYNDHAM B. BLANTON, Richmond: It is high time someone was rescuing our American medical literature from a poverty of information concerning the lacquer dermatoses. Until now it has been another case of "too little and too late". The Axis Nations (Japan and Germany) have until recently had a corner on this branch of dermatologic allergy.**

**With his enviable skill and beautiful photography, Dr. Vaughan has warned us of the hazards of an innocent-looking chair arm, the subtle poison of a harmless Chinese game, the danger that lurks in a bobby pin, and the penalty which the plastic (the modern eyeglass frame, for example) sometimes imposes. Dr. Vaughan's paper has raised our index of suspicion, and, after all, this is primary in the kind of a detective work which the allergist is called upon to do. He has extended the frontiers in the ever-widening field of contact dermatitis. The enormity of the subject is appreciated when Sulzberger tells us he has 800 materials for patch-testing, and when a textbook on varnish and shellac advises that a single concern may manufacture as many as 100 to 200 kinds of varnish alone.**

**Fortunately, we do not have to patch-test for every conceivable agent. A good history and clinical trial may be all that is necessary. The break-down of a substance, such as a modern varnish, takes us into complicated chemistry; but it is possible to test one ingredient after another until the offending one is discovered. If this is done, it is conceivable for a painter, for example, to continue his trade, using materials from which this particular chemical has been excluded.**

**Fortunately, also, the manufacturers are alive to the hazard incident to the use of their products. One cosmetic concern writes that it has not been able to manufacture a satisfactory non-allergic nail polish. Another cites thousands of complaints from the uses of a competitive product but claims to have a lacquer of its own, of which millions of bottles have been put out over a long period of years, without a single complaint. All of this means that the subject before us, though complicated and perplexing, can be unraveled.**

**DR. D. C. SMITH, University: Inflammatory skin diseases result from two main groups of causes: the first group is due to a toxic agent reaching the skin from inside the body (constitutional), and the second group results from injurious agents getting to the skin from the outside environment (contact). There are many chemical and physical agents in one's environment which may injure the skin. A sensitivity or heightened reactivity of the skin to an agent increases the possibility of injury. Because of the large number of agents and the many ways of indirect contact, finding the guilty chemical or agent often requires very careful detective work.**

**The reason why nail polish dermatitis often involves the eyelids is because of the habit that a large number of individuals with long fingernails have of stroking the eyelids with the back of the fingers. Nail polish remover, which in most cases is made up principally of acetone, may also cause an inflammatory reaction in the skin of the hands as well as other parts of the body. This agent like many others may cause injury to the skin by direct irritative action without the factor of allergy being present.**

**I enjoyed very much this paper with the excellent colored illustrations.**

# EFFECT OF CASTRATION ON SERUM PHOSPHATASES IN A CASE OF METASTASIZING CARCINOMA OF THE PROSTATE*

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The presence in serum of a phosphatase whose optimum pH is above 9.0 (serum "alkaline" phosphatase) and the increased serum "alkaline" phosphatase activity associated with certain diseases of bone and liver are well known. One of the more recent developments in chemical analysis as an aid to diagnosis and prognosis of disease has been the determination of serum "acid" phosphatase activity. This enzyme is distinct from the better known "alkaline" phosphatase and has its optimum pH at 4.9. Interest in serum "acid" phosphatase originated with the finding that normal adult prostate tissue was extremely rich in an apparently specific phosphatase with optimum activity at about pH 4.9.[1] This enzyme was also found at the site of skeletal metastases secondary to carcinoma of the prostate.[2] An "acid" phosphatase with properties corresponding with those of prostate phosphatase was demonstrated in the blood serum of patients with actively metastasizing carcinoma of the prostate,[3,4] and the diagnostic possibilities of the presence of elevated serum "acid" phosphatase activity have been discussed.[3,5,6,7,8,9]

Huggins and Hodges[10] used the serum "acid" phosphatase level as an objective means of following the effect of castration on metastatic prostatic carcinoma. They found a decrease in serum "acid" phosphatase activity after bilateral orchiectomy in their patients and presented curves showing the effect of this operation on the serum phosphatases in two of their subjects. Clinical improvement was associated with the decrease in "acid" phosphatase in these patients.[11] The clinical benefits of surgical castration have been confirmed in a number of cases of prostatic carcinoma.[12, 13, 14, 15, 16, 17, 18] Other studies of the effect of this operation on the activity of serum phosphatases in this condition have not appeared at the time of this writing.

An excellent opportunity to observe the effect of castration on the serum phosphatases presented itself in a case of metastatic prostatic carcinoma in which the serum "acid" phosphatase value before castration reached 973 Gutman units. This value is one of the highest in the literature, and it was considered of value to know whether an extremely high serum "acid" phosphatase value would drop to about normal in the short time (7 to 12 days) noted by Huggins and Hodges[10] following castration of patients with very much lower serum "acid" phosphatase values (26 and 35 King and Armstrong units). The course of serum "alkaline" phosphatase activity following castration was also studied in an attempt to correlate the effect of castration on the activity of both phosphatases in this case.

"Alkaline" phosphatase activity was determined by the method of King and Armstrong[19] and is expressed as units per 100 cc. of serum. As defined by King and Armstrong, "1 unit of phosphatase is that amount of enzyme which, when allowed to act upon excess disodium phenylphosphate at pH 9.0 for 30 minutes at 37.5°C., will liberate 1 mg. phenol." Values obtained on normal subjects by this method range from 3 to 13 units per 100 cc. of serum. A Klett-Summerson photoelectric colorimeter with Filter No. 42 was used for the colorimetric determinations of both "alkaline" and "acid" phosphatase activity. Serum "acid" phosphatase activity was determined by the method described by Gutman and Gutman.[20] The results are expressed as units of "acid" phosphatase activity per 100 cc. of serum. The unit of "acid" phosphatase activity as defined by Gutman and Gutman[20] is "that degree of acid phosphatase activity which at 37° will liberate from the specified buffer-substrate solution (pH 4.9) 1 mg. of phenol in 1 hour". Although the Gutman method for serum "acid" phosphatase activity is an adaptation of the King and Armstrong method for serum "alkaline" phosphatase, it will be noted that the unit of "acid" phosphatase activity as defined above is not the same as the original King and Armstrong unit and is based on the mg. of

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phenol liberated *per hour*. For this reason we prefer to call the unit of serum "acid" phosphatase activity obtained by this method "Gutman unit" rather than call it King-Armstrong unit as has been done in several papers.[7, 8, 9] That there is a difference between the two units should be recognized generally in order to avoid confusion regarding the range of so-called normal values, especially since values for "acid" phosphatase activity have also been expressed in terms of the original King and Armstrong unit.[10, 11, 21] "Acid" phosphatase values presented in this paper are thus calculated on the same basis as those in the papers of Gutman, *et al.*[3, 5, 6, 20] and of Herger and Sauer.[7, 8, 9] The upper limit of "normal" values on this basis has been considered as 3 units by Gutman and 4 units by Herger and Sauer. The papers of these authors should be consulted for information concerning normal values, borderline values and their interpretation.

The course of activity of the serum phosphatases following castration in this case is presented in Figure 1. The clinical history of the patient is discussed later. It will be noted that the serum "acid" phosphatase curve (solid line) is referred to the left scale and that the serum "alkaline" phosphatase (broken line) is referred to the scale at the right of the figure. The units of serum "acid" phosphatase are the Gutman units defined above; the units of

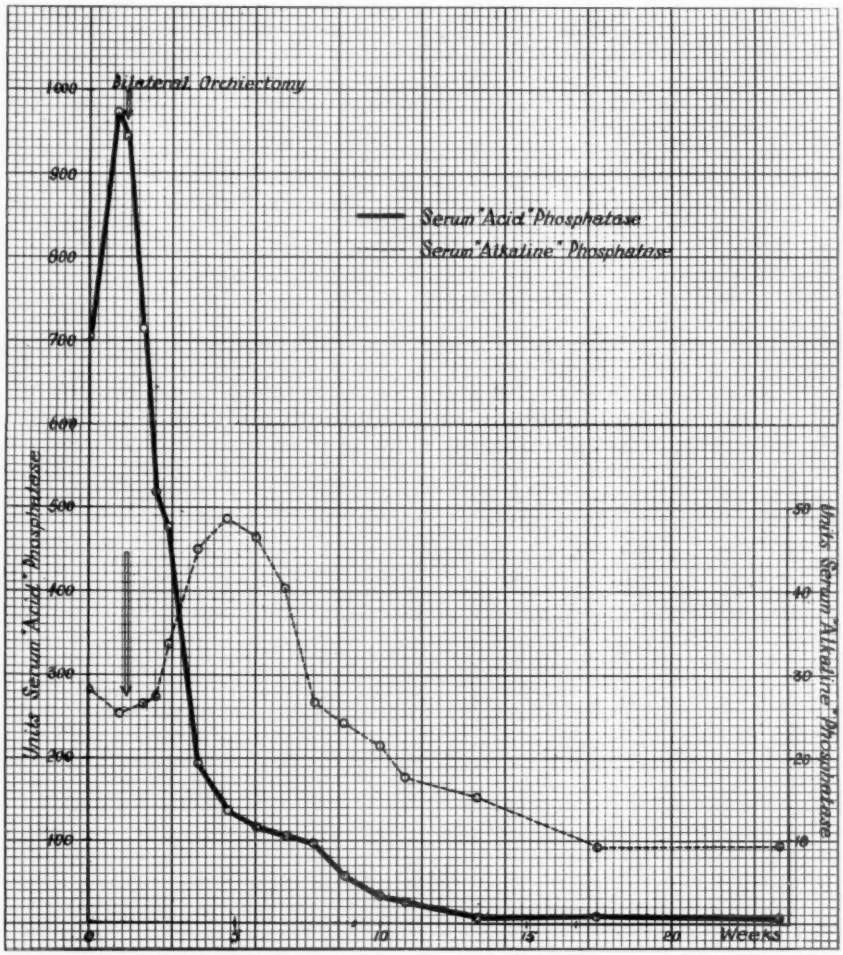


Fig. 1.—Serum phosphatases before and after castration.

"alkaline" phosphatase activity are King and Armstrong units.

*"Acid" Phosphatase:* Nine days before castration the serum "acid" phosphatase was 705 units. The rapidly increasing enzyme reached 973 units a week later. The arrow indicates an "acid" phosphatase activity of 946 units on a blood sample taken just before the operation. The difference between this value and the one of two days before is considered negligible in values this high. The precipitous drop of the serum "acid" phosphatase activity following castration is evident. Analyses were done twice a week during this period. The "acid" phosphatase decreased 428 units the first week after operation and had dropped 752 units on the 17th post-operative day. The rate of decrease in "acid" phosphatase activity then became less rapid and the enzyme activity during the next month dropped only from 194 to 98 units. It was not, however, until the 12th post-operative week that the "acid" phosphatase approximated the "normal" range at 5.9, at which level it still remained 10 weeks later. This is in contrast to the short time (7 to 12 days) noted by Huggins and Hodges[10] in their studies on castration of patients whose initial serum "acid" phosphatase values were very much lower.

Fig. 2.—Roentgenogram 17 days before castration.

*"Alkaline" Phosphatase:* It must be remembered that the scale of the "alkaline" phosphatase curve is different from that of the "acid" phosphatase curve and, therefore, the rise in "alkaline" phosphatase is not comparable to a similar drop in the "acid" phosphatase curve. The placing of both curves on one graph, however, allows one to observe the relationship between the time of operation and the time that the decrease in "acid" phosphatase activity and increase in "alkaline" phosphatase activity occurs. The serum "alkaline" phosphatase activity before castration (28.3 and 25.2 units) was higher than normal (upper limit 13 King and Armstrong units). This increase was probably due to the bone productive metastases. The extent of the lesions can be seen in the roentgenogram taken 17 days before castration (Figure 2). The day of operation is indicated by the arrow. Ten days after castration (when the "acid" phosphatase had dropped 469 units) the "alkaline" phosphatase had risen definitely above the pre-castration level. Two weeks later (when the "acid" phosphatase had decreased about 800 units) the "alkaline" phosphatase (48.5 units) had doubled its level before operation. In 3 weeks more the "alkaline" phosphatase (26.9 units) had returned to the level at the time of castration. It then began a gradual decline and was slightly above normal (15.2 units) in the 12th post-operative week when the "acid" phosphatase was near normal at 5.9 Gutman units. The "alkaline" phosphatase was in the normal range 16 weeks after castration and was at the same level approximately 23 weeks after the operation.

The observed increase and subsequent decrease of "alkaline" phosphatase accompanying the post-castration decrease in "acid" phosphatase activity is in agreement with the results of similar experiments by Huggins and Hodges.[10] These changes in "alkaline" phosphatase activity may be caused by, and be reflections of, changes occurring at the site of the metastatic bone lesions. It has been suggested by Woodard and Higinbotham[22] that when cancer originating in a soft part metastasizes to bone the increased serum "alkaline" phosphatase is ordinarily produced not by the invading tumor but as part of a defense or healing reaction in the adjacent bone. If this is correct the elevation of serum "alkaline" phosphatase after castration might be due to an intensification of this defense or healing reaction following the removal of gonadal androgen. Such an intensification of the defense or healing reaction might result in increased calcification at the site of the metastatic lesions following castration in these patients, as was found by Hug-

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gins, Stevens and Hodges.[11] After the completion of this phase of bone activity one might expect the serum "alkaline" phosphatase to return to normal. Roentgenograms of changes in metastatic bone lesions after castration in cases of prostatic carcinoma have been published by Huggins, Stevens and Hodges[11] and by Huggins.[14] They noted decreases in, or disappearance of, radiographic evidence of metastases in about 18 months. Figures 3 and 4 are roentgenograms taken 70 days and 6 months respectively after castration in the present case. Although bone productive metastases were still present 6 months after castration, the appearance of the bones was becoming better and the bone productive changes were decreasing.

Fig. 3.—Roentgenogram 70 days after castration.

Fig. 4.—Roentgenogram 6 months after castration.

It is also of interest to point out that Farrow and Adair[23] noted an elevation of serum "alkaline" phosphatase following bilateral orchiectomy in a case of metastatic *mammary* cancer in a male. Radiographic evidence of increased density at the site of metastatic bone lesions interpreted as a reflection of increased calcification and healing was noted in their case.

*Clinical History:* The patient, a Negro man, aged 71, was admitted to St. Philip Hospital January 23, 1942. For the previous six months he had had dribbling, frequency and nocturia 4 to 5 times. There had been a gradual progressive edema of the lower extremities with the edema much more pronounced in the left leg. In addition there was pain in both legs extending well up into the lumbar region of the back. The pain had been constant, dull and aching and for the previous few weeks had been severe. For the previous four months this patient had spent most of the time in bed, as he could not get about because of the pain and edema. There was no history of respiratory difficulty. During a previous hospitalization in July, 1940, the diagnosis of carcinoma of the prostate had been made. At that time rectal examination revealed a hard, nodular prostate several times the normal size which was clinically a definite carcinoma. Roentgenograms revealed increased calcification of the 5th lumbar vertebra and iliac bone which appeared to be metastatic lesions. There were prominent inguinal lymph nodes which were excised. The pathological report was chronic lymphadenitis. He received, during this hospitalization, roentgen therapy (9,000 r) for carcinoma of the prostate.

Physical examination on admission January 23, 1942, was essentially negative except for the abdomen, prostate and extremities. Rectal examination revealed a very firm and nodular prostate, three times normal size. In the abdomen there was a suggestion of a non-tender mass in the left lower quadrant. There was slight pitting edema over the

sacral area. There was a massive pitting edema of the entire left leg and a moderate amount of edema of the right leg. Palpable lymph glands were not present. Roentgenograms showed bone productive metastases to the pelvic bones, lower two lumbar vertebrae and sacrum (fig. 2). The chest plate suggested miliary mottling that could be early metastases. Laboratory findings of interest were as follows: Blood: 3,820,000 RBC; 66 per cent hemoglobin (Sahli); 28 mg. non-protein nitrogen per hundred cc.; negative Wassermann. Urine: specific gravity 1.020; no albumin, sugar or acetone; 5 ounces residual urine; phenolsulfonephthalein excretion was 45 per cent in two hours.

The diagnosis of carcinoma of the prostate was confirmed on rectal examination by Dr. A. I. Dodson, Chief of G.U. staff. The patient would not consent to orchiectomy at this time and remained in bed in the hospital. On January 31, the acid phosphatase was 705 Gutman units, and a week later it was 973 units. Consent was obtained for the operation and a bilateral orchiectomy was performed February 9, 1942.

One week after orchiectomy the patient was sitting in a chair daily. On February 25, he was noted to have a more cheerful outlook, and the pain and edema had decreased slightly. Two days later the edema was noted to be definitely decreasing. On March 15 the edema was gone, and the patient was up and about. The abdominal mass noted previously had disappeared. There was still some pain in the lower back. The acid phosphatase at this time was 115 Gutman units. On April 21, the patient was discharged—to be followed by the Out-Patient Department. His condition had improved remarkably. He still had some frequency and occasional nocturia, 1 to 2 times. There was still some pain in the lumbar region of the back but to a much less degree. All edema had disappeared. Roentgenograms at this time (70 days after castration) showed bone productive changes in the lower three lumbar vertebrae, sacrum, pelvic bones and both hips, more marked in the left pubic, ischial, and iliac bones, sacrum and vertebral bodies with only slight changes in the right pelvis (fig. 3).

Six months after castration definite improvement in bony appearances was noted. There was a diminution in bone productive metastases in both iliac bones and right pubis and a more uniform appearance of the left pubic ischial bones (Fig. 4). Rectal examination revealed the prostate to have decreased markedly in size. The condition of the patient was still good. He still had some pain in the back and nocturia 1 to 2 times. He was up and about doing light duties.

Examination of the patient one year after orchiectomy revealed a moderate sized, non-tender prostate. There were no urinary compliants; he still had some "aching" in the lumbar region of the back. The patient was otherwise in good condition and doing light work. (Added to proof sheet.)

We are indebted to Dr. F. B. Mandeville, Professor of Radiology, for the use of the roentgenograms included in this article and for his interpretation of them.

## SUMMARY

A study of serum "acid" and "alkaline" phosphatases over a period of 6 months following surgical castration in a case of metastatic prostatic carcinoma having an unusually high pre-castration "acid" phosphatase activity of 973 Gutman units is presented. This unusually high "acid" phosphatase activity returned approximately to normal in the 12th post-operative week, in contrast to the shorter time (7 to 12 days) noted by Huggins and Hodges in their studies on castration of patients whose initial serum "acid" phosphatase values were very much lower. A post-castration elevation in serum "alkaline" phosphatase with subsequent return to normal was found in this patient. Clinical history of the patient in whom marked improvement followed castration is presented. Roentgenograms of the metastatic lesions taken before and after castration are included in the discussion.

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## BENIGN AND MALIGNANT LESIONS OF THE URACHUS
### With Special Reference to the Colloid Carcinoma of the Bladder*

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This presentation has been prompted by the opportunity we have had during the past 18 months of studying several instances of diseases of the urachus.

Such lesions are apparently rare. Text-books deal with them very briefly and one has to collect information from various scattered sources. Still, one gains the impression that diseases of the urachus are more frequent than the statistics would make us believe, since their true nature is often not recognized. A proper diagnosis, however, is not only desirable for the sake of scientific correctness but is of distinct practical importance. The lesions of the urachus require a particular therapeutic approach, and such approach is possible only on the basis of a correct diagnosis. It seemed worthwhile, therefore, to call attention to this little known chapter of pathology.

Let us consider first what exactly the urachus is and from which embryological structures it derives. Only on this basis shall we understand the pathological deviations.

In post-embryonic life, the urachus represents an involuted structure. Originally it was a part of the

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fetal bladder. As you will remember, the bladder is formed, except for the trigone and the region of the ureteral openings, by a division of the common cavity of the cloaca by a transverse vertical septum. This septum establishes a posteriorly located organ, the rectum, and an anteriorly situated organ, the bladder. It is important to remember this common origin if one wants to understand certain pathologic conditions in the bladder, e.g., the formation of glands in glandular cystitis, the finding of mucus producing epithelium in exstrophy of the bladder, and the histogenesis of the adenocarcinomas of the bladder which, in their microscopic picture, cannot be distinguished from a cancer of the rectum. Normally, however, the primitive epithelium lining the cloaca is modified to meet the physiologic purposes of the final organ. The fetal bladder extends up to the navel where it continues into the allantoic stalk which also carries the umbilical vessels and is better known as the umbilical cord. Eventually, the upper half of the bladder narrows, the lower half retires behind the protective barrier of the pubic bone and all there remains of the upper half is a duct like structure, the urachus.

We distinguish two main portions of the urachus (Fig. 1): The upper portion obliterates completely and becomes a fibrous structure which, with the equally obliterated umbilical arteries, forms the so-called ligamentum commune. The urachus proper is usually 4-5 cm. long. It has a supravesical portion and an intramural portion which latter is subdivided again in an intramuscular and intramucosal part. Even under normal circumstances, the urachus never obliterates completely but remains partly or completely patent. In about one-third of the cases, there is an open communication with the bladder. However, urine does not enter it because a small transverse fold of mucosa acts as a valve. Only when there is increased back pressure due to an obstruction of the urinary flow or increased intra-abdominal pressure, urine may be forced past this valve. Cystic widenings and lateral pouches are frequent. The lumen is lined with 1-3 layers of epithelium which has no basal membrane and which desquamates freely. These cells have retained the potentialities of the cloacal epithelium, and it is, therefore, not surprising if we find them provided with considerable proliferative activity.

The whole structure is, of course, situated preperitoneally in the space of Retzius.

Involution, patency, communication with the bladder, cystic widenings, epithelial proliferation and desquamation are characteristic of the urachus and are in themselves of no clinical significance. It is only when one or several of these properties deviate too far from the normal limits or when infection intervenes, that symptoms appear and the physician is needed.

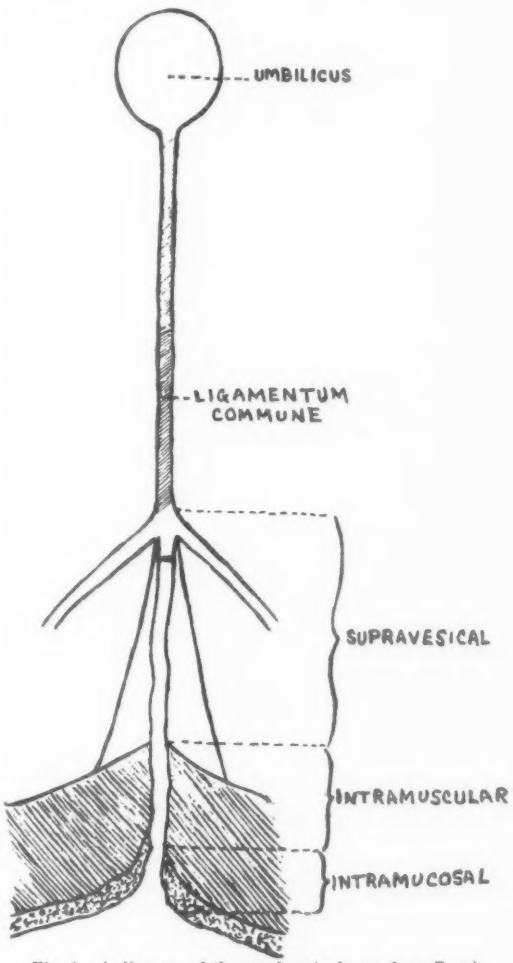


Fig. 1.—A diagram of the urachus (redrawn from Begg).

A brief list of the pathologic conditions follows:

1. Unformed urachus or persistent fetal bladder.
2. Patent urachus—
   complete: vesico-umbilical fistula
   incomplete: umbilical fistula
   vesical fistula or diverticulum of bladder.

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3. Cysts.
4. Tumors—
   benign
   malignant.

Important complicating feature of 1-3: inflammation, specific and non-specific.

When the urachus does not form at all, it means that the upper end of the bladder fails to narrow and the bladder reaches up to the umbilicus. Or, as it has been seen in other cases, it narrows but does not separate from the bladder and the cavity of the latter is continued by a canal to the umbilicus. As a result, we find urine draining from the umbilicus, although this may not be so because sometimes the umbilical end is closed. Frequently, an umbilical hernia is an associated finding. We have had occasion to study one such case.

This girl had been operated on for an umbilical hernia two hours after birth. Following this operation, there was a drainage of urine-like fluid from the umbilicus for about a year. At the age of five, she had a period of pyuria and passed a stone. About five weeks before her final admission, at the age of 11, she passed another stone and was treated at another hospital for chronic cystitis and pyelonephritis. On the day of her admission, she suddenly became very restless and began having convulsions. These convulsions continued at the hospital; she presented the picture of overwhelming toxemia and died 36 hours after admission. The girl was markedly under-developed. The bladder was large and pear-shaped (Fig. 2). It extended to the umbilicus to which it was attached by adhesions. It was severely inflamed and its wall was thickened. A concretion of anvil shape was lodged in the narrow upper portion. This case illustrates a possible although rare source of urinary concretions in children.

When we consider next the fistulas, we must realize that it is only when there is a communication with the bladder that urine may be found draining from the umbilicus. Otherwise, the drainage is serous or purulent. Although not all umbilical fistulas are of urachal origin, most of them probably are. It is possible to excise the tract extraperitoneally. It is important to follow it down and resect it as close to the bladder as feasible. The following micrograph (Fig. 3) shows a cross section from the patent urachus diagnosed and removed in a 20 year old man. He had suffered for several years with attacks of indefinite abdominal pain until, a few weeks before he came to the hospital, a fistula broke open at the umbilicus.

The vesically open urachus impresses as a medially located diverticulum. It has a certain importance because it is from here that certain types of rebellious chronic cystitis are maintained. Not all of the fistulas are congenital. Some are acquired in later life when increased back pressure due to lower obstructions forces the urine past the mucosal valve which normally closes the urachus and thus may open a previously closed small canal. A cystogram will reveal the condition.

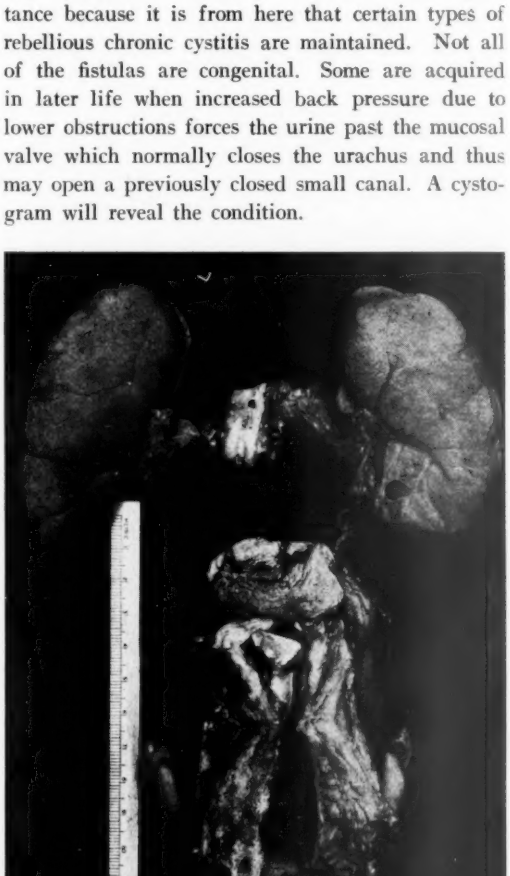

Fig. 2.—Persistent fetal bladder with concretion in upper narrow portion.

Probably most of the cysts are retention cysts. More than half of them are found close to the bladder in which some of them open. They sometimes attain tremendous size. The largest described contained 20,000 cc. of urine-like fluid. Their contents vary. One finds serous matter, urine, pus, blood, desquamated cells, and, rarely, concretions. The diagnosis is not easy. Rankin and Parker men-

tion that relief by forward stooping and accentuation of pain by deep breathing are worth-while diagnostic helps. Their therapy is, of course, surgical. When infected, it may be necessary first to drain them and to remove them later. An unfortunate complication is the perforation of an infected cyst into the peritoneal cavity. In other cases, the size alone may necessitate surgery. Many of the smaller cysts and most cases of partial and complete patency become of clinical importance only after they have become infected. While the inflammation usually is non-specific, cases of tuberculous infection have been described, one followed by tuberculous peritonitis.

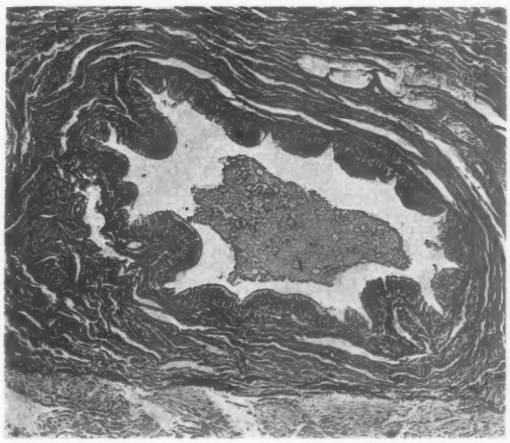

Fig. 3.—Patent urachus.

If we now turn our attention to the tumors, we can dismiss those of mesodermal type very briefly. Fibromas, fibromyomas and sarcomas are found only rarely and in association with the ligamentum commune. Near the bladder, they are exceedingly rare. They have never been properly diagnosed before operation. The tumors originating from the urachus proper are prevalently epithelial tumors and, with the exception of a few isolated fibro-adenomas, they are adenocarcinomas. Most of them produce mucus, and their histological picture does not differ from that of an adenocarcinoma of the rectum. Some of them originate in the supravesical portion of the urachus. They then appear as firm growths which may attain considerable size without causing any symptoms, or only vague abdominal discomfort. They become attached to the peritoneum without invading it. Metastases are rare, at least before operation. Of much greater interest are those tumors which arise from the intramural portion of the urachus. Here they must be differentiated from the other more common types of bladder tumors. Adenocarcinomas of the bladder are rare. They represent only about one-half per cent of all malignant tumors of the bladder and not all of them are of urachal origin. Some originate from aberrant prostatic and urethral glands. These are usually located in the bladder neck and in the lateral wall. Others have been traced to metaplastic changes in the bladder mucosa. However, those located in the vertex, in the midline or not far from it, are of urachal origin. Since they develop within the wall they affect the mucosa only secondarily. If a tumor is pedunculated, its urachal origin becomes doubtful although Begg has seen urachal carcinomas hanging into the bladder by a pedicle in the fashion of a pedunculated myoma protruding from the uterine cervix. Usually, however, the tumor forms first a bulge covered by normal or edematous mucosa. Only later the surface ulcerates and then one may notice the mucoid material oozing from it. The following micrograph (Fig. 4) represents a section from such

Fig. 4.—Colloid adenocarcinoma of urachus invading the wall of the bladder. Normal mucosa at top.

a tumor, showing the tumor underneath the normal epithelium of the bladder. This tumor was removed from a 26 year old man. Incidentally, this is the youngest patient ever seen with this lesion. One other patient, aged 29, has been observed, while the majority of the patients are over 40 years old. This young man was troubled for a few weeks with dysuria and hematuria, the

blood appearing at the end of the micturition. He had had a similar episode one year before. At his first admission, a urethral stricture was encountered and the bladder seemed normal. However, four weeks later, he came back because he had now severe pain, and this time a broad, apparently malignant ulcer was seen in the dome. A tumor the size of a lemon was found in the posterior wall of the vertex somewhat to the left and was excised with a wide margin. No radiation was given. The patient has been seen repeatedly and is still well after seven months.

Usually the prognosis is poor. The management in this type of tumor is surgical. While for the papillomatous carcinoma radiation and semi-surgical procedures as fulguration have their definite place, the colloid adenocarcinomas are radio-resistant and the only way of treating them is by radical excision. As a matter of fact, Begg recommends a complete dissection of the entire space of Retzius in order to forestall the frequent recurrences in this area.

In closing, I wish to re-emphasize the fact that the lesions, benign and malignant, of the urachus represent an interesting chapter of pathology of practical importance as to their diagnosis and treatment.

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NOTE: While this paper was in print, the following publications dealing with diseases of the urachus have appeared:

Hughes, P. B., and LaTowsky, L. W.: Colloid Adenocarcinomas of the Urachus. *Am. J. Surg.*, 58, 422, 1942.

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### DISCUSSION

DR. A. I. DODSON, Richmond: We are greatly indebted to Dr. Dreyfuss for this excellent paper. He has presented a clear and concise description of the embryological relationship of the urachus to the urinary tract and of the pathological processes that may occur when involution of the urachus becomes arrested. Arrested development, abnormal growth or incomplete involution are frequently encountered in diseases of the urinary tract. A thorough knowledge of embryology is essential for an adequate understanding of such pathological processes.

Although disease of the urachus was recognized in 1550, only 154 cases could be found in the literature in 1936 when the last complete review was published. Certainly diseases of this structure occur more frequently than is indicated by the number of reported cases.

Incomplete obliteration is the usual cause of pathological processes arising from the urachus. Inflammation of the umbilicus, cystitis, or urachal cysts may occur, depending upon the location of the patency. Complete patency is very rare and always associated with an obstructive lesion at the bladder orifice or in the urethra. Cyst is the most frequent disease of the urachus requiring surgical treatment. These cysts usually present a tubular mass in the mid-line of the abdomen below the umbilicus. Occasionally the cyst grows to considerable size and presents the appearance of an abdominal tumor. Such a cyst weighing 751.27 grams was removed by Dr. J. Shelton Horsley from a four-year-old boy. It was strongly attached to the umbilicus and to the fundus of the bladder. My former associate, Dr. Charles M. Nelson, treated a patient with an infected cyst. The patient complained of abdominal pain and there was a tender mass extending from the pubis to the unbilicus. Following preliminary drainage, the cyst wall was excised. I have treated two patients with carcinoma of the bladder apparently arising from the intramural portion of the urachus. In each case the upper third of the bladder including the adherent peritoneum was excised. One of these patients is in good health three years following the operation. The other patient died six months following operation from metastases to the lungs.

# FURTHER EXPERIENCE WITH TUBAL DIVISION IN SALPINGITIS*

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The reluctance of gynecologists to discontinue salpingectomy in favor of tubal resection has not given the latter operation for curing salpingitis the chance it deserves. Tubal resection was introduced first by Falk in 1936, and since then has not had, as far as I know, very wide acceptance. In 1939, I reported a series of cases and have continued to use the operation with much satisfaction. All the cases reported in that paper, which I have been able to follow, have had excellent results from their tubal ligation and division.

Several cases of severe salpingitis have been operated in this manner, and the results are such that I believe the operation should prove of merit in all cases of gonococcal salpingitis regardless of its severity.

The first report of ligating tubes in salpingitis, that I have been able to discover, is that of Elgart in 1934, who placed ligatures at the fimbriated ends in order to prevent the escape of purulent material which he believed produced pelvic peritonitis. He reported 50 cases, of which two were reoperated for other conditions. In these two the inflammation had completely subsided in the ligated tubes which, apparently, had given no further trouble. Falk in 1936 and Falk and Weitzner in 1939 reported a series of cases in which the tubes were ligated and resected at the isthmus with excellent results. In 1939 I reported a series of cases in which the tubes were divided close to the fundus without resecting at the isthmus but taking particular care to lift the uterus and its adnexae out of the pelvic cavity, where they are usually adherent, and restoring the uterus and ovaries, as far as practicable in each case, to their normal position. The paucity of the literature on this subject is all the more surprising in view of the fact that the analogous procedure in the male, ligation of the vas to prevent epididymitis, is well recognized as an operation with nearly perfect results. Ligation of the tubes similarly prevents the occurrence of salpingitis. In fact, Falk as one of his original premises for the rationale of this procedure, points out that salpingitis has never been found in a woman who has had her tubes ligated for sterilization purposes.

Salpingitis is a disease which is self-limited and recurrent in character, progressing by episodes or attacks. After this operation the disease will cure itself, and will not be aggravated or recur as the focus of infection and reinfection, which is in the uterine cervix, has been completely disconnected.

It is not necessary to operate on all cases of salpingitis. Many will subside of their own accord or under conservative treatment. But in those cases in which operation becomes necessary, salpingectomy leaves much to be desired. Often the tubes and the ovaries are in one mass in which it is not feasible to separate the tube from the ovary, and both are removed. Immediately the endocrine system is affected and, except in the most phlegmatic, the nervous system as well. I feel that regardless of the gross appearance of the ovary the degree to which the ovarian cells have been damaged by the inflammatory process cannot be judged, as I have found by experience that the majority will resume their secretory activities when the inflammation has subsided; the only exception to this is when the ovary has degenerated into one complete cyst. In following some of these patients, I have found that, in spite of the severity of the infection, in only one case, which will be reported in detail, was there any alteration in the menstrual cycle nor did any of the neurogenic symptoms occur which are so characteristic in castrated young women. This includes those cases in which frank abscesses of the tubo-ovarian mass were present.

Removal of the tubes alone is often followed by a series of events which sometimes require years to develop. Frequently the pain itself does not disappear, but more often after a period of six months to three years, abnormalities of the menstrual cycle appear, usually in the form of metrorrhagia. In addition, nervous phenomena and pelvic discomforts gradually assert themselves, and the latter, just as frequently as the former, bring the patient to reoperation. In five such cases which had had their salpingectomy done elsewhere, it was necessary to do another operation when the uterus and ovaries

*Read before the annual meeting of the Medical Society of Virginia, at Roanoke, October 5-7, 1942.

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were removed. These ovaries appeared to be grossly normal, but with striking regularity the pathologist reported that "the ovarian tissue had been replaced by multiple minute cysts and that the endometrium had undergone atrophic changes". Absence of the ovarian hormones accounts for the abnormalities of the menstrual cycle and nervous phenomena. My impression, at the time of operation, was the degeneration of the ovaries was not due to the disease but to the probability that their circulation had been altered by the scar tissue, contractures and adhesions which follow salpingectomies. Normally the ovaries, tubes and uterus are freely movable within certain limits, but after salpingectomy this mobility is decidedly reduced. Although every effort is made to leave this vascular system intact, it is largely nullified by the fibrosis and contractures incidental to the healing of any inflammatory process. There is no reason why this area should be an exception to this rule when indeed it may be especially vulnerable because of the nature and disposition of the tissues involved. This explanation may not be adequate but it is difficult for me to believe that these pelves were left in the condition in which I found them later on.

Thirty-two cases have been operated in this manner since my last report, only one of which required a secondary operation. This case, already mentioned, is to be described in detail for the purpose of demonstrating what happens to the tubes and ovaries after tubal division.

A colored woman, age 30, presented the usual symptoms and signs of severe pelvic inflammatory disease. Upon pelvic examination, all the viscera seemed to be in one large firm tender mass. After a waiting period of two weeks her fever subsided to not quite normal and operation was done. Through a midline incision, the uterus, tubes and ovaries were found matted together to such a degree that it was difficult to make out the individual structures. The fundus of the uterus was finally uncovered together with the medial ends of the tubes. These were cut and ligated, but since the structures were so firmly fixed, no effort was made to attach the lateral cut end to the anterior surface of the uterus. In doing this dissection, which was limited to the fundus of the uterus, numerous small pus pockets were opened and instead of the pus being the characteristic greenish yellow, it was a deep brown with a very offensive odor. The rest of the inflammatory mass was not disturbed. I seldom drain a case of salpingitis but in this case I thought it was necessary. Her convalescence proceeded uneventfully and she was discharged from the hospital in three weeks.

About a year later she presented herself complaining of metrorrhagia, with moderate pain in both inguinal regions, and extremely nervous. Pelvic examination revealed some thickening in the adnexal regions, with the uterus fixed and only moderately tender. While it may have been possible to relieve this patient with x-ray and estrogenic therapy, especially as regards the bleeding, I felt that surgery offered a more positive cure and, in addition, afforded the opportunity to observe what takes place in the inflammatory process after tubal division.

At operation the tubes were thickened but not inflamed and the ovaries were slightly larger than normal in size. The left ovary was a complete cyst. Microscopic study (Dr. Regena C. Beck) demonstrated that the inflammation had entirely subsided. The detailed description of the organs removed follows:

(1) Uterus weighs 56 grams and measures 5.5 x 4.5 cm. Grossly the uterus feels extremely firm and cuts with marked resistance.

Microscopic study shows marked fibrosis throughout the myometrium. The stumps of tubes connected with the uterus are sealed due to a marked fibrosis throughout which there is infiltration of lymphocytes and mast cells. The endometrium shows the early proliferative phase (atrophic). There is no evidence of malignancy nor inflammatory change.

(2) One tube measures 5 x 2 cm. The other measures 3.5 x 1 cm. The tubes are sealed at both ends. They are thick walled and filled with clear fluid.

Microscopic study of the tubes shows marked fibrosis throughout with complete destruction of the lining mucosa. There are a few lymphocytes and mast cells scattered throughout the fibrous tissues.

(3) One ovary measures 2 x 1.5 cm. The ovarian tissue is replaced by marked fibrosis and many small simple cysts. Microscopic study does not show any evidence of inflammatory reaction.

The other ovary measures 4 x 4 cm. The ovarian tissue is completely replaced by one large thick-walled simple cyst with hemorrhage into the contents. Microscopic study of sections of the wall shows only fibrosis. There is no evidence of inflammatory reaction.

It must be borne in mind that removal of these structures at the first operation would have been

extremely dangerous and simple tubal division was the means of reducing the inflammatory reaction, permitting the second operation which has resulted, so far, in a complete recovery.

## CONCLUSION

A total of 63 cases of salpingitis has now been operated by simply dividing the tubes close to the uterus, attaching the lateral cut end to the anterior surface of the uterus and, where possible, restoring the pelvic structures to their normal position. In all cases, including the two which were re-operated, subsequent examination revealed the inflammatory reaction had completely subsided. There was no mortality. Sixty-one cases are symptom free without any further surgery, the endocrine system is intact and the normal pelvic functions have been entirely restored with the exception of reproduction, which already had been lost. In eight of these cases the inflammatory process was so severe that removal of any of the diseased tissues would not only have endangered the intestines entangled in the friable inflamed mass, but would have been extremely hazardous to life. Many authors have reported the necessity for re-operation after salpingectomy as between 5 and 6 per cent of their cases but in this series re-operation was necessary in only 3 and three-tenths per cent. It is for these reasons that I believe tubal division is preferable to tubal removal in gonococcal salpingitis.

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*18 Liberty Street.*

## DISCUSSION

DR. PAUL DAVIS, Roanoke: I am one of the reluctant gynecologists Dr. Jacobson mentions. Frankly, I have not used the operation he describes.

When I first read Dr. Falk's description a number of years ago it impressed me as one of those which are usually discontinued as the late results begin to return to the operator.

Since the advent of sulfanilamide I have been seeing very few cases of troublesome recurrent salpingitis. In those who come to operation there is usually sufficient additional pathology to warrant a more extensive procedure than simple ligation of the tubes.

In young girls where we are particularly anxious to preserve at least the hope for future chances of reproduction, an operation such as this or, possibly, one such as suggested by Dr. Morris, is good to remember. Dr. Morris in his book, "Fifty Years a Surgeon", suggests laying the tubes open and draining all pus pockets in the pelvis. Later he does a secondary operation.

Either of these operations, it seems to me, has a rather limited field of usefulness.

I wish to thank Dr. Jacobson for again calling Dr. Falk's operation to our attention. I am glad to hear of its successful use in his hands, and shall probably try it myself in the near future.

DR. JACOBSON, closing discussion: I agree with Dr. Davis, that it is not necessary to operate on all cases of salpingitis. This I stated in my paper; but in those cases which do come to operation I disagree with the proposition that any additional pathology other than a complete cyst of an ovary warrants a more extensive procedure.

On many occasions I have gone out of my way and taken some risks in order to discover if this inflammatory process will subside when the focus of infection is disconnected. About seven months ago I had a case in a white married woman of 25 in which one tube was decidedly thickened and firm, the other much enlarged and filled with pus. Both tubes could easily have been removed. I aspirated the one filled with pus through a large needle removing about 50 cc., and then cut and ligated both tubes in the usual manner. So far she has been completely asymptomatic and pelvic examination reveals no tenderness or thickening in the abnexal regions.

I have always considered reproduction highly improbable in any case of salpingitis which does not respond to conservative treatment and that operation was done largely for the relief of disabling symptoms.

Probably it requires a firmer faith in the soundness of this theory to resist the temptation of removing such obviously infected tissues. Cutting out this type of inflammation, while nearly as easily done as removing appendices, is not without much more unfortunate sequelae.

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# NON-PENETRATING FOREIGN BODIES OF THE EYE

WILLIAM F. HATCHER, M.D., F.A.C.S.,
Roanoke, Virginia.

In industrial areas, injuries by foreign bodies probably constitute more than one-half of all eye injuries. Penerating wounds of the eye due to foreign bodies will not be discussed in this article, inasmuch as such injuries are seldom treated by the family physician. It should be borne in mind, however, that in rendering first aid in a case of a penetrating wound of the eye, the injured eye should be closed by a patch and bandage.

Persons with foreign bodies in the palpebral or bulbar conjunctiva, or in the cornea, frequently seek relief from laymen and physicians. The subjective symptoms may be helpful or misleading. A foreign body imbedded in the center of the cornea may produce intermittent symptoms and very little reaction in the eye. A foreign body under the upper lid gives immediate and constant evidence of its presence. In many instances, patients complain of a sensation of a foreign body when none is present. In these cases, there is sometimes a history of a foreign body having entered the eye, but it is no longer there on examination. In other cases, there has been an inflammatory reaction in the palpebral conjunctiva of the upper lid. The resulting roughness of the conjunctiva produces an intermittent sensation of one of several small foreign bodies. In all cases of redness or discomfort of the eyes, the presence of a foreign substance should be suspected.

The conjunctiva, a vascular membrane, reacts in a classical manner to the irritation of a foreign body. The conjunctiva immediately around the irritating substance, as well as the portion of conjunctiva over which the substance passes during active winking, becomes engorged. Nature endeavors to alleviate the situation by flushing the eye with tears and removing the irritation of light and movement by photophobia and blepharospasm. These symptoms combined with pain greatly reduce the usefulness of the eye. The intensity of the conjunctival reaction depends largely upon the type of foreign body, the location of the foreign body, and the length of time it has been present. Conversely, the rapidity and completeness of recovery after removal of the foreign body depends upon the above conditions, together with the presence or absence of infection.

The cornea, an avascular transparent structure, reacts in its own peculiar way to the presence of a foreign body. There is a local zone of edema and ulceration with a peripheral zone of congestion at the conjunctivo-corneal junction (limbus conjunctivae). Frequently, the pain and discomfort caused by a corneal foreign body is referred under the upper lid. The presence or absence of a scar of the cornea following an imbedded foreign body will depend upon the penetration of the foreign body or any resultant ulceration. Non-complicated foreign bodies removed from the corneal epithelium do not leave scars. If, however, the foreign body or associated ulceration causes a solution of continuity of Bowman's anterior glass membrane, a corneal scar results. Fortunately, Bowman's membrane is very resistant and may be curretted quite readily with a dull spud. The corneal epithelium regenerates very rapidly under favorable circumstances.

The substances found as foreign bodies in the eyes are innumerable. A few merit special mention: Particles of iron, emery, cinders, and gunpowder stain the surrounding tissue. Particles of glass, paint scales and fish scales are particularly difficult to see. In the summer, insects and plant material frequently act as transitory foreign bodies. The irritating action of in-turned eyelashes must also be borne in mind.

To discover foreign bodies on the conjunctiva or in the cornea, normal near vision is essential. Good illumination, a condensing lens, and a monocular or binocular loupe are necessary adjuncts.

A dilute solution of the sodium salt of fluorescein instilled in the eye will frequently outline, by a green stain, a foreign body otherwise undetected. This dye also temporarily stains denuded corneal areas.

The removal of a foreign body from the lower culdesac is very simple, provided the patient turns the eye well upward. A foreign body under the upper lid is easily removed, provided the patient looks constantly downward while the upper lid is

everted. Eversion of the upper lid is readily accomplished by pressing any small rod-like object, such as an applicator or a wooden match, firmly on the eyelid immediately above the upper margin of the tarsal cartilage while eyelid is turned upward by the firmly grasped cilia. A sterile applicator wrapped with moist cotton is suitable for removing superficial substances.

To remove imbedded foreign bodies, particularly in the cornea, a metallic spud is required. It is also necessary to anesthetize the eye. For this purpose, solutions are employed of holocaine 2 per cent, butyn 2 per cent, pontocaine ½ per cent, or if the intraocular tension is normal, cocaine 2 per cent. A drop of anesthetic solution instilled in the eye at one minute intervals for two or three doses produces excellent superficial anesthesia.

Incidental conjunctivitis must be treated, free drainage being allowed by leaving the eye open. Following the removal of a foreign body from the cornea, antiseptic ointment, such as bichloride of mercury, is instilled and the eye closed by a patch until the epithelium is regenerated. Yellow oxide of mercury is an irritant and not suitable for treatment of an irritated or inflamed eye.

When the corneal epithelium has been abraded and the sensory nerve endings are exposed, patients frequently complain of a sensation of a foreign body in the eye. Products of explosion, such as gunpowder, are well borne by the external eye. Frequently, it is inadvisable to attempt complete removal of all such foreign bodies at first treatment. After a few hours or days, the foreign particles work nearer the surface and are more easily and safely removed.

409 *Medical Arts Building.*

## MISCELLANEOUS

### A Special Warning Bulletin

Regarding Epidemic Kerato-conjunctivitis has been prepared jointly by the United States Public Health Service and the Committee on Industrial Ophthalmology of the American Medical Association, which should be of interest to all physicians.

It is recognized that relatively few cases of epidemic kerato-conjunctivitis may be reported in some areas which are not so essentially industrial as others, but the condition has appeared so extensively throughout the country that the Committee on Industrial Ophthalmology hopes physicians everywhere may be prepared to meet the situation.

EPIDEMIC KERATO-CONJUNCTIVITIS.

*Incubation period.* Five to ten days.

*Clinical Manifestations.* The onset may be preceded by a low fever and mild generalized malaise. The local ocular symptoms are merely those of a foreign body or conjunctival irritation. One eye is usually affected first, and in a large percentage of cases the second eye becomes infected within five to eight days. Preauricular and submaxillary glandular involvement with tenderness is common in a high percentage of cases.

Edema of the lids and the conjunctiva, especially the transitional fold, is very frequent. The conjunctiva presents the appearance of a simple purulent conjunctivitis but with little or no formation of pus. Small areas of pseudo-membrane are not infrequent and when removed leave either small white dotted points or some bleeding points. The bulbar conjunctiva becomes edematous early. At this stage, there is some lacrimation and photophobia, but real pain and blepharo-spasm do not appear until the cornea becomes involved.

The percentage of cases in which corneal involvement occurs varies from 50 per cent to 90 per cent. In six to twelve days after the conjunctivitis appears, the cornea becomes involved by the appearance of discrete gray infiltrates that lie in and immediately under the epithelial layer of the cornea. They may be confined to the periphery of the cornea but in a large percentage of cases involve the pupillary area of the cornea directly. These infiltrates are discrete and seldom become complicated by an erosion of the corneal epithelium with resultant staining with fluorescin. The extent of visual impairment depends upon the number of infiltrates and their location.

*Clinical Course:* The disease is self-limited. In the majority of instances, the conjunctivitis disappears spontaneously in 14 to 18 days. The corneal complication may disappear in seven days or may

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last for many months. The longer they persist the greater is the danger of permanent visual impairment.

*Laboratory Findings:* Scrapings of the conjunctiva show a preponderance of monocytes. Cultures and smears are either negative or show the usual contaminations.

*Treatment:* There is no specific treatment that has shown a definite influence upon the course of the disease. During the acute stage the eyes should be kept clean with irrigations of boric acid, normal saline, or one to five thousand oxycyanid of mercury. If there is much photophobia, 1 per cent holocaine may be instilled at frequent intervals. Five per cent sulfathiazole ointment has been used, as has 5 per cent solution of sodium sulfathiazole sesquihydrate. For persistent corneal infiltrates, x-ray has seemingly yielded some results.

*Period of Infectivity:* It is not yet known how long the danger of transmission to others exists. At present for practical purposes a sufferer from Epidemic Kerato-conjunctivitis may be allowed to return to work when the active conjunctivitis has disappeared.

*Preventive Measures:* At present the only preventive measure known is complete isolation of infected persons. Inasmuch as the disease has been transmitted through medical personnel, the most meticulous asepsis must be insisted upon. Not only must physicians and nurses wash their hands thoroughly with soap and water after each patient, but also eye droppers, solutions, instruments, etc., must be sterilized to prevent infection of non-contaminated persons. The infected individual must be told of the danger of transmission of this disease to others, not only in the plant, but even in the home surroundings. It is suggested that in industrial plants where Epidemic Kerato-conjunctivitis has made its appearance the following methods of procedure be adopted:

1. In smaller plants with a limited personnel, every individual with a red eye should be stopped at the entrance of the plant and sent direct to the plant physician to determine whether or not Epidemic Kerato-conjunctivitis is present.

   In larger plants where such a procedure is not possible, supervisors and foremen should be instructed in detail to make rounds immediately when a fresh shift starts, and send any individual with a red eye to the medical office.
2. If the cases are to be treated at the medical department of the plant, a separate room should be set aside for such cases and in that room there must be exercised the most scrupulous asepsis even to washing off the arms of the chairs in which the patients sit. Aside from the aseptic and separate care of the recognized cases of the disease, special cleanliness of the hands of the physician in the general clinic should be maintained, with the use of an effective disinfectant between cases, lest the infection be spread by means of undiagnosed cases, especially those suspected of having foreign bodies in the eye
3. Every case of Epidemic Kerato-conjunctivitis should be excluded from the communal facilities of the plant until the inflammation has subsided to the point where the plant physician considers it no longer transmissible.
4. Explicit instructions should be given to every individual regarding the danger of transmission, and emphasizing the decrease in the war effort as a result of the time lost from Epidemic Kerato-conjunctivitis.
5. The local health authorities should be notified immediately of the existence of individual cases.

## War Demands for Birth Certificates.

Being interested in a notice in the February *Journal of the Michigan State Medical Society* with regard to the large number of requests for copies of birth certificates from the Michigan Department of Health in 1942, in order to establish citizenship, and the cost to taxpayers for this work, Dr. W. A. Plecker, State Registrar, was asked for a report as to this feature of his work in Virginia. His statement follows:

The great increase in work thrown upon the Bureau of Vital Statistics by war demands for birth certificates is well illustrated by a summary of the number of certificates of the several types sent out during 1942 as follows:

| | |
|---|---|
| 57,924 | Certified copies of births since June 14, 1912, paid for. |
| 2,227 | Certified copies of births since June 14, 1912, for Veterans Bureau and State requirements. |
| 38,745 | Delayed certificates—prior to June 14, 1912, paid for. |
| 884 | Marriage transcripts, paid for. |
| 6,409 | Early births—from 1853 through 1896, paid for. |
| 15,802 | School and child labor verifications without certified copies—free. |
| 122,041 | |

This represents cash earnings for the State Treasury by the Bureau of Vital Statistics of $75,652.05—approximately the cost of its maintenance and is in addition to the regular statistical work for which the Bureau was set up in 1912.

Until quite recently, since January 1, this was accomplished with a force but little above ordinary needs. It was done, even as well as it was by transferring from indexing and other work every clerk whose work could possibly be postponed for the future. An unimaginable condition of chaos was produced, extremely humiliating to officials who prided themselves upon keeping their work up to the mark. At one time the work was five or six weeks behind, with an accumulation of over 6,000 requests for searches, "as quick as possible," "will lose my job if I don't get a certificate by the end of the week," "can't get into the Air Corps (navy or army) until I get my birth certificate," etc., etc. The letters of criticism and abuse, forty or fifty daily, of the State, the Bureau, and of those in charge of it was something terrific to bear.

The burden was greatly increased by the considerable number of unreported births in the practice of two or three dozen physicians who in the past looked upon reporting births as a nuisance. There are now only about a half dozen of that type left on the black list for the State. The correspondence connected with securing these missing certificates adds greatly to the total burden.

During that period a number of the best trained clerks and stenographers were enticed away by higher salaries. This has not yet ceased. The force is now composed largely of untrained, inexperienced helpers who require two or three years' training before being able to act independently, and are as yet far from sufficient in number. A number of the old timers, who feel responsible for the work and take pride in doing it well, can be found at their desks long after the closing hours and on holidays. Many times they take work home and continue at it to ten or eleven o'clock in the evening.

### The General Practitioner and the Early Diagnosis Campaign.

Fire is fire, no matter what the fuel, but when gasoline is thrown on a flame a dangerous explosion results. Tuberculosis is the same disease now as in peacetime, but war invariably favors a flareup of tuberculosis and creates new difficulties for those who must combat the blaze. The hard-pressed general practitioner is a seasoned firefighter, whose aid must be enlisted and whose effort must be supported if smouldering tuberculosis, lately coming under control, is to be prevented from spreading into a serious conflagration. Even veteran firemen, however, periodically examine their equipment and drill themselves to increase their efficiency.

This month, the Virginia Tuberculosis Association is participating in a nationwide campaign, the chief aim of which is to find tuberculosis in its early and most curable stages.

If tuberculosis is to be found preclinically or at onset of its earliest symptoms a thorough, practical and economical plan of attack is necessary. This calls for early diagnosis, hospitalization of active cases and discovery of the source of infection. Greatest hope for success lies in the interest and cooperation of the general practitioner. He sees the patient early and through his intelligent effort will come early diagnosis, prompt isolation and investigation of contacts.

Weapons at hand include history, physical examination, tuberculin test, sputum examination, x-ray and fluoroscopy, and sanatorium treatment.

Unfortunately, all too many early tuberculous cases fail to reach a sanatorium because of the absence of early diagnosis. In a study made for the National Tuberculosis Association by Jessamine S. Whitney and Mary V. Dempsey, in which the Virginia State sanatoria were included, we find that upon admission to the sanatoria 48 per cent of the cases were diagnosed as far advanced, while but 13 per cent were considered minimal. Although no definite statistical evidence is available on this point, it was obvious from the information available that almost all cases were discovered through symptoms severe enough to send the patient to the physician.

Doctor Paul Geary in the March Bulletin of the National Tuberculosis Association writes, "if we persist in describing tuberculosis in terms of symptoms, we might as well omit further discussion of early diagnosis, even though we admit knowledge of classical symptoms is essential if we are to have tuberculosis in mind when we encounter those less fortunate cases long past the stage when early discovery was possible."

The greatest contribution the general practitioner can make in the field of tuberculosis in wartime is

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the intensification of his peacetime effort, keeping the disease constantly in mind and remembering that the ultimate ideal in controlling tuberculosis would be to have every adult x-rayed annually.

*Note:* A copy of "Chest X-ray Interpretation" by J. Burns Anderson, M.D., or "Diagnostic Standards and Classifications of Tuberculosis" prepared by the National Tuberculosis Association and The American Trudeau Society will be sent free upon request to any Virginia physician by the Virginia Tuberculosis Association, 504 Atlantic Life Building, Richmond, Va.

## CURRENT INFORMATION ON SYPHILIS

Sponsored by
COMMITTEE ON SYPHILIS CONTROL
MEDICAL SOCIETY OF VIRGINIA

Funds have been set aside for the provision of a number of Rapid Treatment Centers in several States. The centers will provide medical care designed to cure early syphilis, gonorrhea, and other venereal diseases. In order to satisfy the demand for emergency control of venereal disease during the war, the medical directors at the centers will avail themselves of the most effective rapid treatment technics now practiced, including four or five weeks' post-treatment observation under medical supervision. In addition to medical treatment, the centers will provide some form of vocational guidance.

The basic responsibility of the Public Health Service is to provide consultation service to other agencies cooperating in the program and to furnish specially trained physicians, nurses and technical personnel to operate the centers.

More than thirty centers will be in operation by the end of 1943. It is estimated that 15,000 infected persons will be admitted to the centers and rendered non-infectious, their disease either arrested or cured, during the war.

A program aimed at the curbing of prostitution and venereal disease in the U. S. and its possessions through the efforts of the 2,000,000 members of the General Federation of Womens Clubs was started recently at the meeting of its board of directors in Chicago, Illinois. The program was presented to the directors, who represented 16,500 clubs, in a report by the Federation's department of public welfare.

The Retail Druggists Association of San Antonio, Texas, recently adopted strong resolutions critical of the sale of so-called patent medicines in the treatment of venereal disease and pledging support to the medical profession in the effort to suppress these diseases by scientific treatment and management.

The promiscuous girl and the casual "pick-up" have become a greater problem for law enforcement officers and health authorities than the organized commercial type prostitute, according to police experts who attended the recent meeting in New York City, New York, of the National Advisory Police Committee on Social Protection. At the same time, a representative of the American Bar Association told the group that local branches of his organization are ready to cooperate with police officials, health officers, and judges in strengthening existing legislation regarding repression of prostitution and quarantine of prostitutes.

Lay workers are proving successful at contact tracing and follow-up work in a southern State, according to reports received in Washington. They were largely responsible for finding and bringing to treatment 494 individuals previously unknown to be infected with venereal disease who had been reported to local health officers for investigation during one month. The persons found and brought to treatment were contacts reported by infected service men, contacts reported by infected civilians, and selectees whose physical examinations had shown evidence of venereal disease.

Evidence of syphilis was detected in 45.3 out of every 1,000 men in the first two million to be examined as selectees or volunteers for service in the armed forces. This was revealed in a tabulation and

analysis of 1,895,778 reports of serologic tests for syphilis on men between the ages of 21 and 35 who reported for examination under the Selective Training and Service Act of 1940. The rate of prevalence for the entire male population of the United States between the ages of 21 and 35 is estimated to be 47.7 per 1,000. Among Negro selectees, the rate is 253.1 per 1,000; among white selectees, 17.5 per 1,000. The estimated rate of prevalance for the entire male Negro population aged 21 to 35 is 272 per 1,000; the entire male white population, 23.5 per 1,000.

One of the most critical of all the problems faced by wartime America is that of securing adequate manpower for our war industries. Handicapped persons, people normally considered as being too young or too old to work in factories, women by the millions who have never before worked outside their homes—all of these manpower resources will be drawn upon. And yet every day we read predictions that a serious shortage of workers is impending.

There cannot be maximum utilization of our manpower so long as large numbers of workers are excluded from industrial employment because they have non-infectious syphilis. Furthermore, this mistaken policy works serious damage to our national control program since it causes people to conceal infection in the fear that it will keep them from obtaining or holding jobs.

## CASE REPORT OF MATERNAL DEATH

MATERNAL HEALTH COMMITTEE
MEDICAL SOCIETY OF VIRGINIA

The patient, a twenty-six year old, colored multigravida, two months pregnant, was seen on two separate days by her family physician, because of nausea and vomiting. She was sent to the hospital and admitted for an operative procedure. On the day following admission, dilatation and curettage were done, and the uterus packed, at which time her temperature was 98.4, pulse 84, respiration 20. On the first postoperative day the temperature was 101, pulse 100, respiration 22. The pack was removed thirty-seven hours after operation. There was a complaint of lower abdominal pain at intervals immediately following the operation, and severe abdominal pain accompanied by vomiting was present on the third postoperative day. A chill occurred eight hours before the pack was removed. The temperature remained elevated and varied between 99 and 102, and the pulse increased gradually to 148. She was given intravenous fluids, morphine and quinine, but the abdominal pain continued and vomiting occurred at intervals. On the fifth postoperative day, after the intravenous administration of 500 cc. of 5 per cent dextrose solution, the patient's condition became much worse. The pulse became weak and the skin cold and clammy. There was partial recovery from the attack but that same evening the patient died three hours after a transfusion.

### COMMENT

This has been classified as a preventable death by the Committee. Although the history is incomplete it seems as if very little effort was made to treat this patient before she entered the hospital. Treatment in the home of severe cases of vomiting of pregnancy is practically impossible. This patient was admitted to the hospital for the interruption of the pregnancy and not for the treatment of the vomiting. It is rarely necessary to interrupt a pregnancy for vomiting. Certainly a normal temperature, pulse and respiration would not indicate a seriously ill patient. Hospital treatment with isolation, sedation, glucose intravenously, and vitamin therapy will cure practically all of these patients. Surgical intervention should be postponed until medical treatment has had a fair trial. In extreme cases, however, interruption of the pregnancy may be necessary and at times is a life saving procedure.

It is the opinion of the committee that this patient died of sepsis, probably having had a perforated uterus at the time of the operation.

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## MENTAL HYGIENE NOTES

### Virginia Conference of Social Work. Roanoke, Virginia, April 21-24, 1943.

The program to be presented by THE MENTAL HYGIENE SOCIETY OF VIRGINIA, Friday, April 23, in Roanoke is as follows:

MORNING SESSION:

THEME: Mental Hygiene—Present and Post-War Planning.

*Morning Session:* 9:30 A. M. to 12 noon.

1. The Problem of the Military Rejects and Casualties.
   Dr. Samuel W. Hamilton, Mental Hospital Advisor, Division of Mental Hygiene, U. S. Public Health Service, Washington, D. C.
   Discussant: Dr. O. B. Darden, Associate Professor of Neuropsychiatry, Medical College of Virginia, Richmond.
2. The Problem of the Civilian Maladjusted.
   Dr. David C. Wilson, Professor of Neuropsychiatry, University of Virginia School of Medicine, University, Virginia.
   Discussant: Dr. Richard S. Lyman, Professor of Neuropsychiatry, Duke University Hospital, Durham, N. C.

*Afternoon Session:* 2 to 4:30 P. M.

1. The Value of Field Clinics in Meeting Our War and Post-War Mental Hygiene Problems.
   Dr. Joseph E. Barrett, Supervisor of Clinics, Commonwealth of Virginia, and Clinical Director, Southwestern State Hospital, Marion, Virginia.
   Discussant: Mrs. Marjorie Wyatt, Superintendent Girls Industrial School, Bon Air, Virginia.
2. The Social Workers' Part and the Community's Obligation in the Promotion of Field Clinics.
   Mrs. Donna Banting Bemiss, Chief Psychiatric Social Worker, Children's Memorial Clinic, Richmond, and
   Miss Wilhemina Baughman, Intake Supervisor, Children's Bureau, Richmond.
   Discussant: Mrs. Jean Smith Hunter, Field Representative, Department of Public Welfare, Abingdon.

NIGHT SESSION: 8 P. M. (Public).

THEME: ALCOHOLISM: A Social, Psychiatric, and State Problem.

1. The Role of the Commonwealth.
   The Honorable Hunter Miller, member of the State Alcoholic Beverage Control Board.
2. The Role of Psychiatry.
   Dr. Robert V. Seliger, Instructor of Psychiatry, Johns Hopkins University, Medical School, Baltimore.

The Program Committee for this session is composed of:

Dr. O. B. Darden.
Dr. R. Finley Gayle, Jr.
Dr. David C. Wilson.
Dr. Hugh C. Henry.
Mr. William Shands Meacham.
Mrs. Donna Banting Bemiss.
Mr. Elwood Street.
Dr. Howard R. Masters, *Chairman.*

## MILITARY MEDICINE

### Virginia Doctors in Service Supplement 4

This is the Fourth Supplement to the list of Virginia Doctors in Service, the original list appearing in the July, 1942, MONTHLY, with supplements in September and October and January, 1943. Names are given alphabetically, with home addresses, in view of constant changes in location and rank. Readers will render a service by sending names of any omissions that they may be published at a later date.

MEMBERS OF MEDICAL SOCIETY OF VIRGINIA

**Dr. Henry R. Bourne, Danville.**
**Dr. W. A. Brown, Jr., Portsmouth.**
**Dr. Kenneth Cooper, Lynchburg.**
**Dr. Jesse Bruce Hopkins, Bridgewater.**
**Dr. Edmund Horgan, Warrenton.**
**Dr. Joseph L. Hundley, Charlottesville.**
**Dr. G. Richardson Joyner, Suffolk.**
**Dr. J. H. Judson, Arlington.**

Dr. R. G. McAllister, Richmond.
Dr. H. C. McCoy, Gordonsville.
Dr. S. H. Mirmelstein, Newport News.
Dr. John S. Pearson, Jewell Ridge.
Dr. Benj. F. Phillips, Quantico.
Dr. Carl I. Pirkle, Prince George.
Dr. E. B. Robertson, Danville.
Dr. B. Carter Rowe, Fredericksburg.
Dr. J. Ward Sinclair, Warrenton.
Dr. George H. Smith, Winchester.
Dr. James W. Tankard, Hilton Village.
Dr. Wm. R. Tyson, Norfolk.
Dr. G. D. Vermilya, Richlands.
Dr. M. J. W. White, Luray.
Dr. L. K. Woodward, Front Royal.
Dr. Frank B. Wolfe, Coeburn.
Dr. Frank A. Zack, Newport News.

NON-MEMBERS

Dr. Herbert C. Allen, Jr., Richmond.
Dr. A. W. Bradford, Derby.
Dr. Warren A. Colton, Kecoughtan.
Dr. Pete Cummings, Charlottesville.
Dr. Maynard R. Emlaw, Charlottesville.
Dr. Alfred R. Garnett, Norfolk.
Dr. Alfred Ogus, Norton.
Dr. James B. S. Perrow, Lynchburg.
Dr. Jack G. Webb, Richmond.

# Public Health

I. C. RIGGIN, M. D.,
*State Health Commissioner of Virginia*

The report of the Bureau of Communicable Diseases of the State Department of Health for February, 1943, compared with the same month in 1942, and for the period of January through February, 1943, compared with the same period in 1942, follows:

| | Feb. 1943 | Feb. 1942 | Jan.-Feb. 1943 | Jan.-Feb. 1942 |
|---|---|---|---|---|
| Typhoid and Paratyphoid | 13 | 7 | 28 | 38 |
| Diarrhea and Dysentery | 84 | 105 | 179 | 224 |
| Measles | 1,188 | 535 | 1,605 | 1,379 |
| Scarlet Fever | 152 | 155 | 411 | 350 |
| Diphtheria | 37 | 45 | 93 | 116 |
| Poliomyelitis | 4 | 0 | 8 | 0 |
| Meningitis | 154 | 14 | 249 | 31 |
| Undulant Fever | 3 | 0 | 6 | 2 |
| Rocky Mountain Spotted Fever | 0 | 1 | 0 | 1 |
| Tularemia | 4 | 2 | 20 | 14 |

## BLACK MARKET MEAT HAZARDS

The practice of medicine is becoming increasingly difficult under stress of war conditions. Hitherto little consideration has been given to the physician's role regarding evasions of such public health regulations as those which provide for sanitary inspection of meats for human consumption. In recent decades federal meat inspection has played a large and increasingly effective part in the prevention of parasitic infestations, bacterial infections and the toxic conditions loosely termed food poisonings.

Emergency slaughtering of food animals under black market conditions to evade food rationing requirements inevitably must result in a marked increase of sporadic and epidemic incidence of meat borne disease. Fortunately the mortality of those diseases usually is not very high except in the relatively infrequent occurrence of such diseases as botulism. However, the typical severe and alarming onset of the food poisonings in general places illnesses of this character in the emergency class of calls for medical service. Even a single case of this nature is burdensome to the physician already overworked under war conditions. Outbreaks of tens or hundreds of cases, with simultaneous onset, present problems out of proportion to the actual number and severity of the cases.

Physicians as recognized guardians of the public health have special opportunities to advise the laity regarding the very real dangers of illicit meat supplies. Their statements on such matters are properly regarded as authoritative and, because they are spread far and wide by word of mouth, they may prove to be the most effective means of influencing public opinion on the advantages of avoiding the use of illicit and dangerous meat products in rationing times.

With only neglible exceptions, the safeguards of competent meat inspection service apply to all meats and meat products of the larger packers and even of those smaller ones who engage legally in interstate business. But, because diseased stock is unsaleable through the better plants, there is a constant flow of inferior stock and diseased animals to slaughter by individual owners or in inconspicuous establishments which are common sources of black market meat. Only in such ways is a market to be found for meat from animals in the terminal stages of hog cholera or generalized septic diseases, or from animals with heavy parasitic infestations. They will be sold if purchasers can be found. The medical profession may render another public service of inestimable value by bringing this matter to the attention of their patients and friends.

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# New Members

New members of the Medical Society of Virginia, since the list published in the March 1942 issue of the MONTHLY, are:

Dr. H. Charles Ballou, Franklin.
Dr. Roy Alexander Barlow, Winchester.
Dr. Julian Ruffin Beckwith, Clifton Forge.
Dr. Richard Alfred Bennett, Lynchburg.
Dr. Maxwell R. Berry, Jr., Richmond.
Dr. Emmett Perleyman Bray, Richmond.
Dr. Edward Vernon Brush, Jr., Lexington.
Dr. Lester James Buis, Richmond.
Dr. Lintner Earl Clark, Roanoke.
Dr. William Ralph Counts, Bishop.
Dr. W. O'Connor Cox, St. Paul.
Dr. Henry Charles Davis, Bluefield.
Dr. John Huit Dellinger, Pennington Gap.
Dr. Shockley DeWitt Gardner, Richmond.
Dr. William Minor Deyerle, Richmond.
Dr. Siegfried Dratler, Portsmouth.
Dr. Thomas Latane Driscoll, Columbia.
Dr. Clarence Clayton Fabric, Radford.
Dr. Douglass Durston Fear, Roanoke.
Dr. Maurice Milton Fliess, Clifton Forge.
Dr. Glen Gilbert Foster, Stonega.
Dr. Leonard Meredith Galbraith, Norfolk.
Dr. Frederick Gochnauer, Upperville.
Dr. George Everard Godman, Chilhowie.
Dr. Asa Wesley Graves V, Lacey Spring.
Dr. Jacques Pierce Gray, Richmond.
Dr. Harry Lee Greenberg, Covington.
Dr. James Hill Gressette, Roanoke.
Dr. William Sampson Hadley, Norfolk.
Dr. William A. Harris, Spotsylvania.
Dr. Richard Franklin Hawkins, Radford.
Dr. Alvah Livingston Herring, Jr., Richmond.
Dr. Kurt Hirsch, Franklin.
Dr. Paul Regan Howard, Norton.
Dr. Octavius Lake Huffman, Arvonia.
Dr. Levi Woodbry Hulley, Jr., Palmyra.
Dr. Jacob Gerry Jantz, Bedford.
Dr. Hal Standish Johnson, Patterson.
Dr. George Richardson Joyner, Suffolk.
Dr. Ludwig Helmut Korn, Norfolk.
Dr. Joseph Krimsky, Charlottesville.
Dr. Joseph Riddick Leigh, Norfolk.
Dr. Leon Linder, Clifton Forge.
Dr. Ulus Walter Massie, Roanoke.
Dr. Alexander Taylor Mayo, Portsmouth.
Dr. Russell Greenway McAllister, Richmond.
Dr. Donald Carruth McCollum, Arlington.
Dr. Robert William McCullough, Charlottesville.
Dr. Richard Anderson Michaux, Richmond.
Dr. Milton Millman, Derby.
Dr. Claude Linwood Neale, Richmond.
Dr. William Earl Overcash, Roanoke.
Dr. Richard Spurgeon Owens, Jr., Roanoke.
Dr. Maysville Owens Page, Richmond.
Dr. George Benedict Pantera, Richlands.
Dr. Philip Brower Parsons, Norfolk.
Dr. Seymour George Pelzer, Calvin.
Dr. Jack Berry Porterfield, Richmond.
Dr. Claudio Rodriguez, Norfolk.
Dr. Lonsdale Joseph Roper, Richmond.
Dr. George Sterling Row, Richmond.
Dr. John Oscar Rydeen, Norfolk.
Dr. Joseh Schechner, Norfolk.
Dr. Walter Stafan Schiff, Marion.
Dr. Ernest Escarza Serrano, Norfolk.
Dr. Ernest L. Shore, Harrisonburg.
Dr. Leroy Smith, Richmond.
Dr. Maynard Putney Smith, Richmond.
Dr. George James Stuart, Arlington.
Dr. James Marion Suter, Ft. Eustis.
Dr. Myrtle Marie Thomas, Roanoke.
Dr. Frank Blaine Truesdell, Richmond.
Dr. Camilla Ruth Tuthill, Charlottesville.
Dr. Marion Lawrence White, Jr., Charlottesville.
Dr. William Massie Whitehead, Lovingston.
Dr. Frank Dixon Whitworth, Front Royal.
Dr. Francis Droit Willey, Dunbar.
Dr. Robert Manton Wilson, Richmond.
Dr. Frank Bays Wolfe, Coeburn.
Dr. Arnold Milton Zetlin, Norfolk

# Woman's Auxiliary to the Medical Society of Virginia

*President*—MRS. H. W. ROGERS, Norfolk.
*President-Elect*—MRS. W. CLYDE WEST, Alexandria.
*Recording Secretary*—MRS. C. C. SMITH, Norfolk.
*Corresponding Secretary*—MRS. ALBERT G. HORTON, Norfolk.
*Treasurer*—MRS. REUBEN F. SIMMS, Richmond.
*Chairman, Press and Publicity*—MRS. C. E. ARNETTE, Alexandria.

## National Auxiliary Meeting.

Because of the existing war conditions it was deemed advisable by the American Medical Association to cancel the 1943 annual session and hold only a meeting of the House of Delegates in Chicago. The Woman's Auxiliary, by action of the Board of Directors in Atlantic City on June 11, 1942, and in Chicago on November 20, 1942, will likewise confine their 1943 session to a meeting of the Executive Board and the House of Delegates in Chicago, June 7 to 9, to effect a change in officers.

The Drake Hotel has been selected as headquarters for this meeting and the following rates will prevail:

Single room with bath.....$3.50 per day and up
Double room with bath.....$6.00 per day and up
Suite (living room, bedroom and bath).....$12.00 per day and up

It is suggested that those planning to attend the meeting arrange for railroad and hotel accommodations (with the Drake Hotel direct) as soon as possible.

While the action of the Board of Directors calls for a meeting of only the Executive Board and the House of Delegates, any members of the Auxiliary who should happen to be in Chicago at the time of the meeting will be most welcome to attend the general sessions.

### The Mid-Tidewater Medical Auxiliary

Met January 26th in the home of Mrs. W. S. Cox of West Point, with a small but interested group in attendance. Mrs. Hawes Campbell, who has served as president for a number of years was re-elected and presided at this meeting.

Mrs. James W. Smith, Public Relations Chairman, assisted by Mrs. Paul Pearson, led a quiz on the following subjects: "Be Informed on A. M. A." and "About Public Relations".

Dr. F. S. Johns, Richmond, addressed the group on "Medical Education and the Health of the People".

Mrs. Campbell read a memorial to Mrs. Griffin W. Holland, our beloved former State President. We shall miss this lovely character and feel fortunate to have had her in our lives. She was the essence of love, beauty and refinement.

A delicious lunch was enjoyed with our doctors at the York Inn. The next meeting will be in April.

VIRGINIA PEARSON (MRS. PAUL)
*Publicity Chairman.*

### Petersburg Auxiliary.

The annual hospital linen shower was given on February 23rd. In spite of the difficulty in securing linens and of advance in prices, the following donations were made: 116 sheets, 17 spreads, 73 bath towels, 59 face towels, 61 pillow slips, 39 wash cloths, and 1 quilted pad. In addition, $39.50 was given in cash with which necessary linens will be bought. This does not include all donations as some colored churches preferred to wait until next month.

Several changes have been made in the personnel of the officers of this Auxiliary, due to the fact that some ladies have left the city with their husbands who are in the armed forces. Officers now are: President, Mrs. H. M. Snead; president-elect, Mrs. J. E. Hamner; vice-president, Mrs. C. S. Dodd; treasurer, Mrs. Meade Edmunds; recording secretary, Mrs. W. B. McIlwaine; and corresponding secretary, Mrs. C. T. Jones.

### Alexandria Auxiliary.

Mrs. Nathan Schuman, president, presided at the February meeting of this Auxiliary, held at the home of Mrs. H. A. Latane. Mrs. W. Clyde West, delegate, gave a report on the Board meeting of the State Auxiliary in Richmond in January, after which there was discussion of proposed revisions in the by-laws. These were adopted.

As there are many doctors in the Service who are locating in Alexandria, the Auxiliary went on record to extend an invitation to these doctors' wives to become members.

At the close of the business session, the members dispensed with their usual program and began their Red Cross sewing project. They are making blankets for layettes.

## Book Announcements

Books received for review are promptly acknowledged in this column. In most cases, reviews will be published shortly after the acknowledgment of receipt. However, we assume no obligation in return for the courtesy of those sending us the same.

**Essentials of Proctology.** By HARRY E. BACON, M.D., F.A.C.S., F.A.P.S., Professor and Head of the Department of Proctology, Temple University Medical School and Hospital; Head of Department of Proctology, St. Mary's Hospital; etc. Introduction by Curtice Rosser, B.A., M.D., F.A.C.S., F.A.P.S., Professor of Proctology, Baylor University, Dallas, Texas. Philadelphia, J. B. Lippincott Company. 1943. xvi-345 pages. 168 illustrations. Cloth. Price $3.50.

**Chemotherapy of Gonococcic Infections.** By RUSSELL D. HERROLD, B.S., M.D., Associate Professor of Surgery (Urology) College of Medicine, University of Illinois, Chicago. St. Louis, The C. V. Mosby Company. 1943. 137 pages. Cloth. Price $3.00.

**The Principles and Practice of War Surgery.** With Reference to the Biological Method of the Treatment of War Wounds and Fractures. By J. TRUETA, M.D., Formerly Director of Surgery, General Hospital of Catalonia, University of Barcelona; Assistant Surgeon (E.M.S.) Wingfield Morris Orthopaedic Hospital, Oxford; Acting Surgeon-in-Charge

**Accident Service, Radcliffe Infirmary, Oxford. With Introduction by Owen H. Wangensteen, M.D., Minneapolis, Minn. St. Louis, The C. V. Mosby Company. 1943. 441 pages. Illustrated. Cloth. Price $7.50.**

**How to Learn and Advance. By SAMUEL KAHN, M.D., Ph.D., Formerly on the Faculties of Georgetown and New York Universities; Chief Psychiatrist, U. S. Induction Boards for the States of New Jersey and Delaware; etc. xviii-196 pages. Cloth. Price $2.00.**

This small book is dedicated to an important and pressing need: How to Study—a factor to which more time should be devoted by colleges and even medical schools. Good students usually learn this by themselves; poor and mediocre ones may never attain the art unaided. The author discusses the way in which to make use of a library and reference books, the importance of taking lecture notes and of regular time of study in a quiet room, memorizing methods, and suggestions on how to concentrate.

The idea of this book is excellent; unfortunately it is annoyingly repetitious in many places, and dry in others; it needs working over. It is regrettable that where the author states (p. 104) "In his 'Health Precepts', Salerno maintains: . . ." he did not give us some bibliographic data concerning this "Mr. Salerno". R. J. M.

**The Sight Saver. By C. J. GERLING. Harvest House, New York. 1943. 202 pages. Cloth. Price $2.00.**

According to the author this book is intended "merely to acquaint one with what may be done for ailing eyes and is not in any sense to be considered as information for self-treatment of the eyes". He further states that he has included sufficient description and explanation of the structure and function of the eye to supply "general information for the average person . . . without going into technical complexity".

The volume is composed mostly of definitions or explanations of a variety of items with reference to the eyes. The usual arrangement of subject matter into chapters has not been followed. The writer explains, in his introduction, that he has cut up the subject matter into small unit items . . . and has arranged them alphabetically.

The book contains 202 pages of these definitions and explanations, ranging in length from a line or two to two pages, and embraces a "diversity of discussion" as noted in the foreword by Commander Pugh, USNR. Many items which hold interest for the layman are included, such as Beautifying the Eyes, Quackery and Fraud, Sunglasses, Mail-Order Glasses, etc. P. W.

**Food Charts: Foods As Sources of the Dietary Essentials. Prepared by a joint Committee of the Council on Foods and Nutrition of the American Medical Association and of the Food and Nutrition Board of the National Research Council. Paper. Price 10 cents. (Quantity prices on request.) Pp. 20. American Medical Association, Chicago, 1942.**

Current interest in nutrition is at a high level and the subject merits all the attention which it is receiving. Information about the composition of foods now is on a quantitative basis. A forceful presentation of some facts about foods as sources of the dietary essentials is provided by the present illustrated essay, which has been prepared by a joint committee of the Council on Foods and Nutrition of the American Medical Association and of the Food and Nutrition Board of the National Research Council. There are eight charts showing the contribution, that individual foods may make with respect to the needs for protein, calcium, iron, vitamin A, thiamine, riboflavin, nicotinic acid, and ascorbic acid. A feature of these graphic presentations is that the values are presented in terms of the proportion of the daily requirements which are supplied by typical servings of each food. The requirements selected are the Recommended Daily Allowances of the Food and Nutrition Board of the National Research Council. The charts show, for example, that a serving of about 3½ ounces of cooked greens (beet, kale, chard, mustard, spinach, turnip) will supply more than 10,000 International units of provitamin A, the daily allowance of which is 5,000 International units. An orange of average size, or half a grapefruit, or a serving of fresh strawberries will supply the 75 milligrams of ascorbic acid which is considered to be a desirable intake of vitamin C. It is interesting to note the unique value of milk as a source of calcium, protein and riboflavin. There is a descriptive paragraph or two about each of the charts. In addition the booklet reproduces the table of Recommended Dietary Allowances and also provides the values of Minimum Dietary Requirements developed by the Food and Drug Administration for purposes of labeling special dietary foods. This little essay thus provides considerable factual information about foods as sources of the dietary essentials.

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# Editorial

## Rheumatic Fever

THERE is a growing conviction that in some manner rheumatic fever should be made a reportable disease. In Virginia where the disease has been considered to be relatively rare, we now learn through mortality statistics that the death rate from rheumatic fever and rheumatic heart disease is average for the country as a whole and is six times as high as that from infantile paralysis, generally regarded as one of childhood's greatest menaces. The only diseases outranking it as a cause of death among children between the ages of five and fourteen are pneumonia and tuberculosis.

Of course, the frequent difficulty encountered in making an accurate diagnosis of rheumatic fever is one reason for the failure to make it a reportable disease. This seems especially unfortunate now since conditions favoring its spread are existing in many of our wartime boom towns throughout the country. These conditions include damp, overcrowded quarters, malnutrition, fatigue, lack of sunshine and recreation, and lack of medical care.

Success in controlling rheumatic fever depends upon early discovery and adequate medical care. Many children have repeated attacks until they reach adolescence and occasionally afterward. The incidence of heart damage which is high even in the initial attack, increases with each recurrence of the disease. The duration of an attack may be for months or even one or two years. Therefore, it is obvious that the expense of this care frequently is beyond the means of the family's budget even when adequate facilities are available for it.

In order to insure that the patient will be brought to the physician's attention promptly, an educational program for the general public is advisable. The American Academy of Pediatrics, The American Heart Association, The Children's Bureau, Department of Labor, and some of the large insurance companies now are conducting a nation wide educational campaign to reduce mortality from this disease.

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A demonstration being carried on by the State Health Department for the past two years reveals the presence of the disease to a considerable degree. During this two-year period approximately 150 children in Richmond and the adjoining counties have been diagnosed as having rheumatic fever and are being cared for in their own homes or in hospitals and convalescent homes set up in the Richmond area.

A diagnostic clinic provided with the most modern scientific equipment and manned by specially qualified clinicians is one of the most important services in the program. Such a clinic is operated by the State Department of Health in cooperation with the Out-Patient Department, Medical College of Virginia.

From this relatively modest beginning, it is expected that adequate care for these children eventually will become available throughout the State, as the private physician on a constant alert for such cases, indicates the need in his local community.

I. C. RIGGIN, M.D.
*Virginia State Health Commissioner.*

## One-Man Medical Schools

LESS than 150 years ago, 1797 to be exact, Dartmouth started what Harvey Cushing[1] aptly called a one-man medical school. The school was organized by Nathan Smith, who was its entire faculty. Not only did he do all the teaching, but he made his living by practicing medicine and surgery twenty miles away in Cornish, New Hampshire. At a somewhat later date Dr. Peter Mettauer ran a medical school here in Virginia with the aid of his two sons. Nor were such institutions confined to the backwoods of America. Abraham Flexner[2] is our authority for the statement that Johannes Müller (1801-1858) was the entire German medical faculty at the University of Berlin.

When compared to modern medical schools, such institutions are the best possible evidence of the tremendous advances that medicine has made in the past one hundred years. They also mark the transition between the apprentice system of instruction that pertained previous to that time and the more systematic instruction of the medical college. In Colonial times most of the practitioners were trained by the apprentice system. A few studied medicine in Europe. The earliest American medical schools started as schools of anatomy. When William Shippen, Jr., for instance, returned to Philadelphia in 1762, after studying medicine in London and Edinburgh, he started a course of anatomical lectures. Three years later he and Dr. John Morgan started the medical school of the College of Philadelphia. In 1763 Dr. Samuel Clossy gave a course of lectures on anatomy at King's College, and in 1768 a medical school was organized in connection with the college which was the forerunner of the College of Physicians and Surgeons of Columbia. In 1780 Dr. John Warren demonstrated anatomy in a series of dissections before his colleagues in Boston, and three years later when the Harvard Medical School was started, he became the Professor of Anatomy. William and Mary had its school of anatomy but got no further towards a regular medical school.

The fourth medical school to be established was Dartmouth. Even after the establishment of medical schools the student's clinical instruction was supplied by the apprentice system. He "read" medicine with some well established practitioner before, and even after, he entered the medical school. At the school the instruction, with the exception of dissections, was entirely didactic. As the sciences, chemistry, physiology, pathology, and bacteriology developed, laboratories were added, and finally within our own memory, the teaching hospital became the very center of the medical school.

With the university-type of medical instruction, the apprentice system dropped out

of the picture, so far as undergraduate-medical teaching was concerned. It still played an important role in post-graduate instruction. Again in this field, it has been followed by what is in effect one-man medical schools. For instance, Dr. Joseph L. Miller runs what might be termed a one-man school in general practice and industrial medicine. He takes on an assistant for three years. At the end of that time, the assistant has to leave to make room for another. We asked Dr. Miller why the inflexible three-year rule. His reply was: "If the assistant is any good, it is not fair to him to keep him, and if he is no good, three years are long enough." Dr. Sproat Heaney[3] described his system for post-graduate training in gynecology in his presidential address before the American Gynecological Society. When his assistant has been with him three years, Dr. Heaney sends him on a travel course at the end of which he endeavors to establish the student wherever he wishes to locate. No doubt, there are many of these one-man post-graduate schools throughout the country, but here, too, they are being supplanted by more formal academic instruction in the form of residencies in the various medical centers. Thus we go round and round in search of the most important thing in medical education—clinical experience.

REFERENCES

1. The Medical Career. Little, Brown & Co. 1940.
2. I Remember; Autobiography of Abraham Flexner, New York, Simon & Schuster, 1940.
3. Transactions of the American Gynecological Society, 63:1, 1938.

# Societies

## Virginia Board of Medical Examiners.

At the meeting of the Board on December 8-11, 1942, the following were granted certificates:

Dr. Janet Alexander, Staunton.
Dr. Theodore Edwin Alm, Richmond.
Dr. Lewis Franklin Boddie, Roanoke.
Dr. Roy Alexander Barlow, Winchester.
Dr. James Henry Carpenter, Waynesboro.
Dr. Thomas S. Chalkley, Richmond.
Dr. Emerson Day, Washington, D. C.
Dr. Lyle E. Delap, Radford.
Dr. Samuel Stanley Dorrance, Washington, D. C.
Dr. Bruce Eccles Douglass, Richmond.
Dr. Charles Leo Dugan, Newport News.
Dr. Claude McClintic Dunlap, South Charleston, W. Va.
Dr. Boyce Elliott, Welch, W. Va.
Dr. Ronald B. Fankboner, Dahlgren.
Dr. James A. Gannon, Washington, D. C.
Dr. Istvan A. Gaspar, Norfolk.
Dr. Jacques Pierce Gray, Richmond.
Dr. Robert Milton Greenberg, Arlington.
Dr. Milus Liddell Gunn, Harlan, Ky.
Dr. Emmett Dysart Hightower, Dahlgren.
Dr. Robert Carhart Hood, Arlington.
Dr. Isadore Kamin, Weston, W. Va.
Dr. Arthur Jerome Koven, Blacksburg.
Dr. Benedict Kudish, Hampton.
Dr. Rachelle L. Kurman, Newport News.
Dr. Evelyn Taylor Livermore, Alexandria.
Dr. Leonidas Franklin Livisay, New York, N. Y.
Dr. Robert Ira Lowenberg, Portsmouth.
Dr. Thistle M. McKee, Alexandria.
Dr. James Keith Morrow, Radford.
Dr. Ellen Mary Nicholson, Waynesboro.
Dr. Marion Z. Ploski, Emory.
Dr. Julian T. Potts, Newport News.
Dr. Grace Purse, Washington, D. C.
Dr. Catherine W. Richard Smith, Suffolk.
Dr. Norman Strauss, New York, N. Y.
Dr. John Thruston Thornton, Charlottesville.
Dr. Ralph W. Weilerstein, Falls Church.
Dr. LeMoyne White, Washington, D. C.
Dr. Ruth Mitchell White, Washington, D. C.
Dr. Eugene Lorenzo Willard, Arlington.
Dr. Robert Manton Wilson, Richmond.

## Wise County Medical Society.

At the meeting of this Society on February the 12th, officers for the current year were elected as follows: President, Dr. J. J. Porter, Norton; vice-presidents, Dr. R. W. Holley, Appalachia, Dr. Jos. Culbertson, Coeburn, and Dr. S. G. Pelzer, Calvin; and secretary-treasurer, Dr. W. B. Barton, Stonega. The Board of Censors is composed of Drs. F. S. Givens of Wise, D. C. Keister of Osaka, and C. L. Harshbarger of Norton.

After the business session, the DeLee film on "Post-partum Hemorrhage" was shown and much enjoyed.

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### Roanoke Academy of Medicine.

At a dinner meeting of the Academy, held on March 1st, the following scientific program was presented: Hepatitis by Capt. Frank L. Bauer, M.C., and The Immediate Care of Wounds by Lt. Col. D. C. Elkin, M.C. Both speakers are from the Ashford General Hospital at White Sulphur Springs, W. Va.

At the February meeting, Dr. W. F. Hatcher spoke on Artificial Fever Therapy in Ocular Inflammation; Dr. Jerome Natt on Some Menstrual Disturbances; and Dr. Roy M. Hoover on Treatment of Trochanteric Fractures of the Femur.

Dr. Paul Davis is president of the Academy and Dr. Ruth Barnhart, secretary.

### Norfolk County Medical Society.

Dr. Samuel A. Cosgrove, obstetrician-in-chief of Margaret Hague Maternity Hospital in Jersey City, was guest speaker before this Society at its regular meeting on March 15th. His subject was "Analgesia and Anesthesia in Obstetrics".

## News

### Medical School Graduates.

Due to war conditions, the graduating exercises of both Virginia medical schools were "stream-lined" and practically all entertainment dispensed with.

MEDICAL COLLEGE OF VIRGINIA

Governor Colgate Darden was speaker at commencement exercises of the college, held at the Mosque Theatre, after which diplomas were awarded and hospital appointments announced. Following this, the annual reception and dance for the class of '43 were held at the Jefferson Hotel.

Graduates in medicine, with their hospital appointments are:

MEDICAL COLLEGE OF VIRGINIA HOSPITAL, RICHMOND—Drs. James Logan Chitwood, Sylvatus; Custis Lansing Coleman, Lexington; John James Dobbie, Fairmont, W. Va.; George Robert Gish, Jr., Bluefield, W. Va.; George Lester Grubb, Charleston, W. Va.; William Joseph Hagood, Jr., Corbin, Ky.; Abran Ernest Handy, Jr., Stuart; Fontaine Graham Jarman, Jr., Roanoke Rapids, N. C.; William Thomas Lawson, Fairmont, W. Va.; Dorothy Diehl Moore, Richmond; John Sargent Morris, Jr., Lynchburg; Thomas Lee Mosby, New River, Tenn.; James Avon Smith, South Charleston, W. Va.; Arthur Hastings Taylor, Jr., Richmond; Robert Manton Wilson, Jr., Richmond; William Hugh Womble, Jr,. Greensboro, N. C.; and Charles Gravely Young, Roanoke.

JOHNSTON-WILLIS HOSPITAL, RICHMOND — Drs. Charles William Byrd, Louisa; Melvin Bernard Lamberth, Jr., Woods Cross Roads; Percy Everett Schools, Jr., Richmond; and Garnett Roy Tureman, Jr., Pendleton.

ST. ELIZABETH'S HOSPITAL, RICHMOND—Drs. William Joseph Frohbose, Bound Brook, N. Jer.; and Francis Brown Lee, Monroe, N. C.

STUART CIRCLE HOSPITAL, RICHMOND—Dr. Fleming Wood Gill, Richmond.

GRACE HOSPITAL, RICHMOND—Dr. Charles Lester Salmon, Jr., Beach.

UNIVERSITY OF VIRGINIA HOSPITAL, CHARLOTTESVILLE—Dr. Herbert Rowland Pearsall, Roanoke.

NORFOLK GENERAL HOSPITAL, NORFOLK — Drs. Charles Porter Blunt, III, Lynchburg; William Samuel Grizzard, Drewryville; and John David Powell, Stuart.

NORFOLK NAVAL HOSPITAL, PORTSMOUTH—Drs. John Scott Shaffer, Wytheville; and Russell Nelson Snead, Midlothian.

JOHNS HOPKINS HOSPITAL, BALTIMORE—Drs. Horace Allen Albertson, Richmond.

MERCER HOSPITAL, TRENTON, N. J.—Dr. Robert Carl Aliff, Whitesville, W. Va.

BAYAMON CHARITY DISTRICT HOSPITAL, BAYAMON, P. R.—Drs. Eduardo Arandes Rexach, San Juan, P. R.; and Juan Jesus Santos y Tejedor, Yabucoa, P. R.

ROBERT PACKER HOSPITAL, SAYRE, PA.—Dr. Hugh Sharp Brown, Rochester, Minn.

ST. VINCENT'S HOSPITAL, ERIE, PA. — Dr. John Lewis Brown, Ford City, Pa.

PRESBYTERIAL HOSPITAL, PHILADELPHIA, PA.—Dr. William Stelle Johnson, Montclair, N. J.

WILKES-BARRE GENERAL HOSPITAL, WILKES-BARRE, PA.—Dr. Lucile Welsh Richardson, Salem.

ST. LOUIS CITY HOSPITAL, ST. LOUIS, MO.—Dr. Robert Edward Carr, Clinton, N. C.

CHESAPEAKE & OHIO HOSPITAL, HUNTINGTON, W. VA.—Dr. Warren Smoot Carter, Huntington, W. Va.

CHARLESTON GENERAL HOSPITAL, CHARLESTON, W. VA.—Dr. Horace Rudolph Wilber Vial, Richmond.

CINCINNATI GENERAL HOSPITAL, CINCINNATI, O.—Dr. Stuart Harrison Catron, Jr., Marion.

TOLEDO HOSPITAL, TOLEDO, O. — Drs. Charles Franklin Jones, Jr., Lynchburg; and George Fay Schuster, Toledo, O.

UNIVERSITY HOSPITALS, CLEVELAND, O.—Dr. Robert Eugene Moffatt, Shelby, O.

BAPTIST MEMORIAL HOSPITAL, MEMPHIS, TENN.—Drs. William Chapman Chilton, Jr., Appomattox; and Andrew Martin Lang, St. Cloud, Fla.

JEFFERSON DAVIS HOSPITAL, HOUSTON, TEXAS—Dr. William Schofield Clifford, Austin, Tex.

UNIVERSITY OF TEXAS HOSPITAL, GALVESTON—Dr. Mary Julia Squires, Wake Forest, N. C.

CHARLOTTE MEMORIAL HOSPITAL, CHARLOTTE, N. C.—Dr. Hal Stanfield Floyd, Fairmont, N. C.

PARK VIEW HOSPITAL, ROCKY MOUNT, N. C.—Dr. Robert Hubbard Putney, Jr., Elm City, N. C.

CONEY ISLAND HOSPITAL, BROOKLYN, N. Y.—Dr. Alfred Allan Berger, Staten Island, N. Y.

BETH ISRAEL HOSPITAL, NEW YORK, N. Y.—Dr. Harold Sidney Rafal, Brooklyn, N. Y.

MT. SINAI HOSPITAL, NEW YORK, N. Y.—Dr. Norman Rosenthal, Brooklyn, N. Y.

HOSPITAL FOR JOINT DISEASES, NEW YORK, N. Y.—Dr. Leroy Scheller Safian, New York, N. Y.

FLOWER & FIFTH AVENUE HOSPITAL, NEW YORK, N. Y.—Dr. Herbert Leonard Warres, Brooklyn, N. Y.

PASSAVANT MEMORIAL HOSPITAL, CHICAGO, ILL.—Dr. Dale Groom, Lakewood, O.

STATE OF WISCONSIN GENERAL HOSPITAL, MADISON, WIS.—Drs. Rodgers Winters, St. Albans, W. Va.; and Henry Byron Landaal, Waupun, Wis.

ST. ELIZABETH'S HOSPITAL, WASHINGTON, D. C.—Dr. Cecil Guy Hupp, Mt. Jackson.

COLUMBIA HOSPITAL, COLUMBIA, S. C.—Dr. John Marcus Kester, Jr., Wilmington, N. C.

GRADY HOSPITAL, ATLANTA, GA.—Dr. Charles Russell Riley, Richmond.

VIRGINIA MASON HOSPITAL, SEATTLE, WASH.—Dr. William Haller Woodson, Roanoke.

U. S. NAVAL HOSPITAL, MARE ISLAND, CALIF.—Dr. Lawrence Edward Banks, Sacramento, Calif.

MARINE HOSPITAL (ADDRESS UNKNOWN) — Drs. John Russell Potter, Troutville; and Wiley Burns Trivett, Jr., Georges Fork.

U. S. PUBLIC HEALTH SERVICE (ADDRESS UNKNOWN)—Dr. Charles Harper Ward, Pocahontas.

### UNIVERSITY OF VIRGINIA

Simple ceremonies for all the graduating classes of the University were held in Cabell Hall, on the afternoon of March 15. There was no address but a short farewell talk by President John L. Newcomb. After these exercises, the graduates and their immediate families were guests at a buffet supper in Alumni Hall.

Graduates from the Medical School, with hospital appointments, are listed herewith:

UNIVERSITY OF VIRGINIA HOSPITAL, UNIVERSITY—Drs. Walter Protho Barnes, Jr., Stuart; Oliver B. Bobbitt, Jr., Charleston, W. Va.; Armistead Page Booker, New Castle, Del.; Joshua Fry Camblos, Big Stone Gap; Donald Paul Chance, Hagan; William Cassius Cook, Jr., Princeton, W. Va.; Lewis Franklin Cosby, Jr., Abingdon; Thomas Stillwell Edwards, New York, N. Y.; William Fletcher Harrell, Jr., Portsmouth; Carl William Irwin, Harrisonburg; Randolph Leigh, Jr., McLean; Myrtle Evelyn Logan, Meadowview; Raney Archer Oven, Tallahassee, Fla.; James C. Price, Norfolk; George Nicholas Psimas, Portsmouth; Charles Frederick Schneider, Richmond Hill, N. Y.; and John Covington Tinsley, Jr., Lynchburg.

MEDICAL COLLEGE OF VIRGINIA HOSPITAL, RICHMOND—Drs. Monte Leroy Binder, Richmond; and Eusebius Milton Kellam, Cape Charles.

JEFFERSON HOSPITAL, ROANOKE — Dr. James Thomas Colley, Emory.

VIRGINIA MASON HOSPITAL, SEATTLE, WASH.—Drs. Richard Booth, Jr., Lynchburg; and Thomas Carter Fowlkes, Selma, Ala.

GRADY MEMORIAL HOSPITAL, ATLANTA, GA.—Drs. Dan Parker Boyette, Jr., Ahoskie, N. C.; Eugene

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Callaway, Jr., Selma, Ala.; Camillus Saunders L'Engle, Jr., Jacksonville, Fla.; and Robert McKinney Tankesley, Chattanooga, Tenn.

EMORY UNIVERSITY HOSPITAL, EMORY, GA.—Drs. Charles Herbert Henderson, Bonny Blue; Jess Averette Powell, Jr., Edenton, N. C.; and Walter Motley White, Jr., University.

CHARLOTTE MEMORIAL HOSPITAL, CHARLOTTE, N. C.—Dr. Margaret Alford Barnes, Charlotte, N. C.

METROPOLITAN HOSPITAL, NEW YORK, N. Y.—Dr. Irvin Galin, Portsmouth.

CUMBERLAND HOSPITAL, NEW YORK, N. Y.—Drs. Milton Sydney Goldman, Norfolk; and Eugene James Yorkoff, Charlottesville.

NEW YORK CITY HOSPITAL, NEW YORK, N. Y.—Dr. Joseph Kessler, Leaksville, N. C.

ST. LUKE'S HOSPITAL, NEW YORK, N. Y.—Dr. Charles Gillet McKendree, New York, N. Y.

GRASSLANDS HOSPITAL, VALHALLA, N. Y.—Dr. Donald David Markowitz, Jersey City, N. J.

SYRACUSE MEDICAL CENTER, SYRACUSE, N. Y.—Dr. Harold Stanley Yood, Plainfield, N. J.

ST. LUKE'S HOSPITAL, BETHLEHEM, PA.—Dr. William Dandridge Haden, Jr., Charlottesville.

MT. SINAI HOSPITAL, PHILADELPHIA, PA.—Dr. Earl Jay Levine, Richmond.

GRADUATE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.—Dr. Frank Armstrong McCue, Bluefield, W. Va.

PHILADELPHIA GENERAL HOSPITAL, PHILADELPHIA, PA.—Dr. Donald Walters, Charlottesville.

CINCINNATI GENERAL HOSPITAL, CINCINNATI, OHIO—Drs. Dana Covington, Mitchell, Jr., Bluefield; and Nelson Montgomery Smith, Christ Church.

LAKESIDE HOSPITAL, CLEVELAND, OHIO—Dr. John Brewer Petter, Northfield.

IOWA STATE UNIVERSITY, IOWA CITY, IA.—Dr. George Bleecker Ely, Cynthiana, Ky.

ROPER HOSPITAL, CHARLESTON, S. C.—Dr. George Bernard Kegley, Bland.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL, WASHINGTON, D. C.—Dr. Samuel Perry Marshall, Marion, Ala.

CHARLESTON GENERAL HOSPITAL, CHARLESTON, W. VA.—Dr. Joshua Price Sutherland, Haysi.

U. S. NAVY: NORFOLK—Dr. Charles Albert Hudson, Luray. PHILADELPHIA, PA.—Drs. Eugene Rhodes Johnston, Birmingham, Ala.; and Carol Levan Plott, Greencastle, Pa. BETHESDA, MD.—Giles Quarles Gilmer, Lebanon. ADDRESS UNKNOWN—Drs. John Dean Adams, Winchester; Sidney William Cohen, Portsmouth; and Edward Roberts Hawkins, Marion.

### Committee of Arrangements for State Meeting.

As previously announced, dates selected for the 1943 meeting of the Medical Society of Virginia are October 25-27, in Roanoke, with headquarters at Hotel Roanoke.

Dr. John O. Boyd was appointed as general chairman and he has selected the following to serve with him:

DR. F. A. FARMER—*Commercial Exhibits.*
DR. W. W. S. BUTLER, JR.—*Scientific Exhibits.*
DR. A. M. GROSECLOSE—*Entertainment.*
DR. GEORGE S. HURT—*Halls, Lanterns, etc.*
DR. J. W. PRESTON—*Publicity.*
MRS. A. P. JONES—*Ladies.*

### New Tumor Clinic.

Dr. Edwin P. Lehman, chairman, announces that the Cancer Committee of the Medical Society of Virginia has extended certification to the Dixie Hospital of Hampton as a Tumor Clinic at which funds publicly subscribed can be spent for the care of indigent patients. This Clinic will be under the directorship of Dr. Albert A. Creecy and will be known as The Dixie Hospital Tumor Clinic.

### Virginia Society of Ophthalmology and Oto-Laryngology.

The twenty-fourth annual meeting of this Society will be held in Lynchburg on May 15th. Since many members are in the Service, all who possibly can attend are urged to do so in order to make the meeting a success. There will be two guest speakers.

Dr. Guy R. Fisher, Staunton, is president, and Dr. Meade Edmunds, Petersburg, secretary-treasurer.

### Superintendent of Pine Camp Tuberculosis Sanatorium.

Dr. B. B. Bagby, Jr., Richmond, has been appointed superintendent and medical director of Pine Camp, succeeding Dr. George A. Welchons who resigned to enter private practice. Dr. Bagby has

been at this institution since 1939 where he has served as assistant medical director. Dr. George S. Row, resident physician, will be promoted to assistant medical director.

**1893 Class Reunion.**

Eight members of the class of 1893 of the Medical College of Virginia held their reunion at the time of the College Commencement on March 20. There were twenty-two members in the original class and fourteen of these are living. Those present at the reunion were: Drs. Charles A. Easley, Blairs; A. E. Turman, J. J. Anderson, and L. P. Michaels, all of Richmond; T. W. Dew, Fredericksburg; Garland Carter, Boydton; N. P. Snead, Cartersville; and G. Craig Eggleston, Amelia.

**Dr. Thomas N. Spessard,**

Who formerly practiced in Norfolk as a specialist in neuro-psychiatry, has recently been promoted to the rank of Commander in the U.S.N.R. He has been on active duty since October, 1940.

**Promoted in Medical Corps of Army.**

Two Richmond doctors recently promoted from the rank of captain to that of major in the Medical Corps of the U. S. Army are Dr. E. M. Holmes now stationed at Randolph Field, Texas, and Dr. Robert V. Terrell who is at Memphis, Tenn.

**International College of Surgeons.**

The Fourth International Assembly of the College will be held on June 14, 15 and 16 at the Waldorf Astoria Hotel in New York City, it is announced by Dr. Fred H. Albee, International President. The program will be devoted to war surgery and rehabilitation and delegations made up of prominent surgeons from the United Nations in addition to those from other countries are expected to attend. The United Nations representatives will give outstanding examples of the progress being made in war surgery and rehabilitation under battle conditions by their respective countries.

**Dr. G. Foard McGinnes,**

Director of the Bureau of Communicable Diseases of the State Department of Health before leaving Virginia for Tennessee in February 1939, has been appointed director of medical and health service of the mid-western area of the American Red Cross, with headquarters in St. Louis.

**Dr. William Bickers,**

Richmond, by invitation recently addressed the Brooklyn Gynecologic Society on the subject, "Primary Dysmenorrhea". Members of the county society and gynecologists of New York City were invited to this meeting which followed a formal dinner.

**Industrial War Conference.**

The American Association of Industrial Physicians and Surgeons, The American Industrial Hygiene Association, and the National Conference of Governmental Hygienists are combining their annual meetings in a four-day "War Conference" at Rochester, N. Y., May 24-27. This meeting will be a report on the state of the nation in matters of industrial health and all phases of this subject will be fully discussed. An invitation is extended to all doctors who are interested in these problems to attend as many sessions as possible. There will be no registration fee.

**Dr. Anthony J. Borowski**

Has been appointed chief clerk and statistician of the Richmond Department of Public Health. Until recently he was chief of the health section of the Federal Works Agency, WPA., in Washington.

**Speakers at Staff Meeting at Fort Eustis.**

At the February 24th weekly conference of the Station Hospital Staff of Fort Eustis, Dr. Robert L. Payne of Norfolk was the principal speaker. Dr. Everett I. Evans of the Medical College of Virginia, Richmond, was the guest on March 3rd, his subject being "Burns".

**American Public Health Association.**

The Executive Board of this Association announces that they will sponsor a three-day Wartime Public Health Conference in New York City, October 12, 13 and 14. The 72nd Annual Business Meeting of the Association will be held in connection with it. The Conference program will be devoted exclusively to wartime emergency problems as they affect public health and the public health profession.

**Married.**

Dr. John Randolph Kight and Miss Nancy Pearis Edgar, both of Charlottesville, March 6th. Dr. Kight is a graduate in medicine of the University of Virginia, class of 1938, and is now on the

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Staff of the University Hospital. He is a son of Dr. and Mrs. Rufus Kight of Norfolk.

Dr. William Watkins Walton, Petersburg, and Miss Lucille Loving Webb, February 13th. Dr. Walton is a graduate of the Medical College of Virginia in 1942 and is serving an internship at the Norfolk General Hospital, Norfolk.

**For Sale—**

Practically new $250 Liebel-Flarsheim combination infra-red-ultra-violet automatic timed "Ray-Sun" lamp for $195.

Westinghouse "Simplex" x-ray unit and fluoroscope with all accessories. Has been used for less than 200 exposures. $2,500 new; my price $2,000.

Tonsillectomy, obstetrical, and many other practically new instruments, as must close office because of health.

Write Dr. S. H. Macht, Crewe, Virginia.—(*Adv.*)

**Location Wanted**

By draft exempt, well educated and experienced physician. Licensed in Virginia and the District of Columbia. Would like private or industrial practice. At present employed. Address "Physician", care VIRGINIA MEDICAL MONTHLY, 1200 East Clay Street, Richmond. (*Adv.*).

**For Sale—**

Six gal. porcelain tank; 30 milli-ampere self rectified Kelley-Koett machine complete with hand timer and overhead high tension system. Address "Tank Machine", care this journal, 1200 East Clay Street, Richmond, Va. (*Adv.*).

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# Obituary Record

**Dr. Clifton Meredith Miller,**

Well known specialist of Richmond, died February 26th, after having been in ill health for several months. He was born in Richmond in April, 1873, and studied medicine at the Medical College of Virginia, receiving his diploma from that college in 1892, and later served on the faculty of his alma mater. Dr. Miller was also prominently identified with the social and civic life of this community and was a Mason. He had been a member of the Medical Society of Virginia for nearly forty-nine years, and held membership also in many other professional organizations. He was for twenty-one years a member of the City School Board, was at one time a member of the City Democratic Committee and also of the Richmond City Council. In 1937 he was elected governor of the Society of Colonial Wars in the State of Virginia. Dr. Miller is survived by four children.

**Dr. Hawes Campbell,**

Enfield, died suddenly on February 23rd. He was sixty-seven years of age and graduated from the former University College of Medicine, Richmond, in 1898. Dr. Campbell had been a member of the Medical Society of Virginia for forty-four years and was a member of the Advisory Board to the Woman's Auxiliary. His wife and five children, one of them Dr. Hawes Campbell, Jr., survive him. A brother is Dr. Clarence Campbell of Sparta.

**Dr. Henry Taylor Miller,**

Washington, D. C., died February 7th, at the age of sixty-one. He graduated from the former University College of Medicine, Richmond, in 1905, and practiced for a time in Staunton before going to Washington where for the past twenty-three years he specialized in diseases of the eye, ear, nose and throat. He was staff surgeon at the Episcopal Eye, Ear and Throat Hospital and also a member of the staff of Doctors' Hospital. Dr. Miller had been a member of the Medical Society of Virginia since 1909, and was a member of the Medical Society of the District of Columbia, the American Medical Association, and other organizations. His wife survives him.

**Dr. Edmonds Droke Rollins,**

Bristol, Va.-Tenn., died on January the 6th of carcinoma of the throat. He was fifty-five years of age and graduated from the former University College of Medicine, Richmond, in 1909. He was for some time a member of the Medical Society of Virginia.

**Dr. Robert Hamilton Williams,**

Passed Assistant Surgeon in the U. S. Navy, with rank of lieutenant, formerly of Lynchburg, was killed in action in the battle of the Solomon Islands, November 13. He graduated from the University of Virginia, Department of Medicine, in 1938.